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Vol 4 No 46

Fears grow for Soft Aid cash

A BITTER row is brewing over cash raised by the Soft Aid charity appeal, still unpaid to the Band Aid Trust.

The money - around £136,000 - should, according to Soft Aid organiser Rod Cousens, have been paid to Band Aid to help the African famine cause by the end of October.

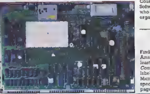
Instead the funds are still being held by MicroDealer UK the software distribution company handling the charity tape on behalf of Rod Cousens. The money has not been held in a separate bank account by MicroDealer prior to being paid over to Band Aid and the funds have been apparently collected in MicroDealer's trading account. MicroDealer's parent company Spectrum Group has rationalised its activities in recent months and there is now concern that MicroDealer may not intend to pay all the money over immediately.

Microdealer claims it has no written agreement with Rod Cousens and intends to pay the money in instalments.

"The money was to have been paid as a lump sum and I do not know why it has not yet been paid," said Rod Cousens, Electric Dreams Software managing director, who originally conceived and organised the Soft Aid tape.

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C128–FULL REVIEW INSIDE





TARO'S TRAVELS BEGIN ON P47

THIS WEEK

- Acorn founders sell shares
- C64 Revs
- New feature: Bytes & Pieces

MICRO MAGIC

Find out if you have won an Amstrad 6128 this week or at least some special *Popular Computing Weekly* cassette labels. Enter your personal Micro Magic number into our special computer program on page 6.



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EDITORIAL

Cough up Micro Dealer, isn't it about time you paid the money over?

Something around £136,000 raised through sales of the charity software tape *Soft Aid* to help the Band Aid Trust fight famine in Africa is currently still sitting with software distributor MicroDealer UK. Why hasn't MicroDealer passed over the money yet? The cash should be being used to help the starving peoples of Ethiopia and Sudan. Surely it was never the intention of those who contributed by buying the Soft Aid tape that their money should serve anyone's commercial advantage?

We do not know why MicroDealer has not yet handed over the cash and to be fair they say they hope to sort out repayment schedules within the next week. With hindsight, though, it is a pity that the money was collected in MicroDealer's trading account. In future ventures of this kind it might be more sensible if the money is split off as a separate account. Similarly, it is a shame that there was apparently no written agreement detailing terms of payment to Band Aid.

That MicroDealer seems to be dragging its feet over payment does not reflect well on the company. Spectrum's financial director Alastair McGillivray must act now to sort this matter out.

The Band Aid Trust should press forward as quickly as possible to recover the money so that it can be used for its intended purpose – fighting the suffering in Africa. Well over 100,000 people have contributed to Soft Aid and their money must be released immediately.

Editor David Kelly **News editor** Christina Erskine **Features editor** Graham Taylor **Software editor** John Cook **Production editor** Lynne Constable **Editorial secretary** Lucinda Lee **Advertisement manager** Jeff Beggott **Advertisement Executive** Diane Holyoak **Classified executive** David Osen **Administration** Geraldine Smyth **Managing editor** Duncan Scot **Publishing director** Jenny Ireland. **Published by** Sunshine Publications Ltd 12-13 Little Newport Street, London WC2H 7PP Tel 01-437 4343 Telex 296275 **Typeset by** Publishers Reprographics Services Ltd 4 Roger Street London WC1 **Printed by** Greenaway Harrison Sutton Road, Southend-on-sea, Essex. **Distributed by** S M Distribution, London SW9 Tel 01 274 8611 Telex 261643 © Sunshine Publications Ltd 1985.

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Computer Trade Association Magazine of the Year

Acorn founders sell shares

ACORN'S co-founders Chris Curry and Hermann Hauser have sold 25,000 shares each in the company.

Both man raised about £1.5m from the sale, but an Acorn spokesman discounted speculation that this meant they were set to leave the company.

"It is only a small proportion of their total shareholding," the spokesman said. "I doubt they would sell out completely at the current share price."

The sale further depressed Acorn's share price, down 13p last week to 48p. Curry and Hauser each have a shareholding of around 14%.

Acorn is still carrying out its product review which began in July, when the company was bailed out for the second time by Olivetti. The review will be complete by December 31, when decisions about continuation of machines such as the Electron and BBC B Plus (64K) will be taken.

Hauser (L) and Curry (R)

Fears grow for Soft Aid cash

◄ continued from page 1

"I think MicroDealer's behaviour is against the interests of the Band Aid Trust - it is reasonable to expect collection within 90 days. I shall be bitterly disappointed if all our efforts have been wasted because of problems at Spectrum Group."

"I am horrified at MicroDealer not being able to pay over the money", said Band Aid trustee and solicitor, John Kennedy. "I would have expected to have had the money by now. I have been getting more and more desperate as the weeks go by. I have written to Rod Cousens half a dozen times and he must bear some of the responsibility for the mess at this stage."

In an effort to recover the money arrangements are now being made to pass authorisation to collect the money from Rod Cousens to the Band Aid Trust. "MicroDealer is dragging its feet and the Band Aid trust is in a much stronger position to recover the money than me," said Rod Cousens.

For MicroDealer, Rod Bodie, the company's financial manager, said, "Spectrum's financial director Alastair McGillivray will be talking with John Kennedy this week to agree a schedule of repayments - the money will be paid in instalments." He declined to comment on the reasons for not paying the money in full and could give no details of the proposed schedule and duration of repayments to Band Aid. He said: "One of the problems we have had is we did not have a written agreement with Rod Cousens and nobody on the financial side of MicroDealer was privy to the original aural agreement."

The £136,000 owed by MicroDealer is the second payment due. The first of over £150,000 was successfully paid by MicroDealer to the Band Aid Trust in July.

BT forms Rainbird to attack US

RAINBIRD is the title of British Telecom's new software division, which will take on some titles previously in development at Firebird (see *Popular Computing Weekly*, 7 November).

The name Rainbird was chosen because it complements the name Firebird and because it will be headed by Tony Rainbird, himself a co-founder of Firebird.

Firebird has also set up a software company in New York, called Firebird Licensees Inc, being run by former Softek sales and marketing manager Marten Davies.

The US operation will be producing disc titles primarily for the Commodore 64 and Apple II, and later the Apple Macintosh. The first releases will be *Elite* at $29.95, and *The Music System* (Commodore only). It will also release a budget range, Super Silver Discs, at $15.95, with two games on the one disc.

Firebird Licensees Inc will not restrict itself to British Telecom products, but intends to license top UK titles from a number of other British companies, for sale in the US.

CBM to push C128 as business micro

COMMODORE UK's strategy for next year will be to establish the C128 as a small business machine.

"We want to promote the fact that the 128 is good for business too," said Commodore's marketing manager Chris Kaday.

"We will be able to sell as many as we can make before Christmas - after Christmas we will be looking for specific market objectives to get the 128 into small businesses."

The C64, which the C128 effectively supersedes, will be realigned and repromoted into a number of specialist market areas.

"There are also many things we can do with the Commodore 64, which is the world's most popular home computer," said Chris. "Applications will be a very strong factor, particularly music since the Music Sales synthesiser products we have been marketing are quite brilliant. We may need to alter our distribution channels this way."

Chris Kaday also confirmed that the Amiga is still on target for an early 1986 launch. It is likely that the machine will be prominently displayed at Commodore's stand at January's *Which Computer?* Show, although he stressed that Commodore felt the Amiga's capabilities were more satisfactorily demonstrated at formal demonstration seminars.

The Amiga is being displayed behind closed doors and by invitation only, at Compec, the business show which runs at Olympia until November 15.

Poel leaves Amstrad for New Star

WILLIAM Poel, who set up Amsoft as a division of Amstrad to attract software for the Amstrad CPC machines, has left the company.

He has bought a software firm New Star, where he will be managing director.

"My job at Amsoft was basically done. How I intend to do everyone a favour by concentrating on around ten CP/M products which provide what people really need for their Amstrads," he said.

Titles include *New Word*, New Star's own word processor, *Supercalc 2*, *The Cracker* a spreadsheet from Software Technology, and *Flexifile*, a database. These will all be marketed from New Star.

William is also trying to establish lower prices for CP/M software. "Around £40 seems to be the best price point."

William Poel

"I am putting all my eggs in Amstrad's basket," he continued. "And I have total confidence in Amstrad continuing to produce mass market machines."

Acornsoft sells Revs to Firebird for C64

FIREBIRD has licensed the top selling Acornsoft title *Revs* for conversion to machines other than the BBC

"It will be one of Firebird's fastest ever projects," said Firebird publisher Herbert Wright "We will also expand the game to include Brands Hatch as well as the Silverstone track"

Revs on the Commodore 64 will be a Gold range game and will cost £14 95 on cassette and £17 95 on disc

Firebird has not acquired Z80 processor rights to *Revs* and at the moment is not pursuing this area

Revs is the second Acornsoft title for which Firebird has required conversion rights The first was the chart-topping *Elite*

Monitors from French micro group

THOMSON Grand Public, France's leading consumer electronics group, is to launch a range of eight monitors for computers such as Atari and Commodore to IBM and Apple

Thomson manufactures the TO7 and MO5 home computers, which are market leaders in France, and its products are sold in the US, Australia and Hong Kong, but it has never released products in Britain before

It is setting up in direct competition with companies such as Microvitec and Philips, with monitors ranging from an £86 low-resolution 12inch screen model, the VM3102VG, to high-resolution colour units from £189 – the CM36632V – up to £649

It has now dropped its plan to try to develop in conjunction with Philips a joint European standard for home computers

DR launches new look Gem programs

DIGITAL Research has now launched the modified versions of Gem *Desktop*, and the applications *Gem Paint* and *Gem Draw*, following its agreement with Apple to change the screen presentation of Gem programs (see *Popular Computing Weekly*, October 10) Apple felt the original screen layouts were too similar to those used on the Macintosh's operating system

Digital Research claims that the new Gem *Desktop* called version 2 0, runs twice as fast as the first version. Users of the new packages will find some icons have changed become bigger while terms on some menus have also changed

Gem Desktop version 2.0.

It has also launched a new Gem application, *Gem Graph*, which provides a wide variety of graph and chart styles to interpret input data and statistics

The changed versions of Gem will become available to customers and manufacturers from January 1986



Letters

Main factors

Although your *Ziggurat* September 26 is right in almost all it says, it is miles off the mark in the reasons it gives why people choose a particular micro

There are three main factors people take into consideration when buying a home micro Price, availability of software and what make of computer little jimmy round the corner has.

In most cases it's mum and dad who do the buying, and they don't usually know a Rom from a Ram, let alone the difference between 8- and 16-bit processors

Now, if it's the merry minority of us to whom you refer – the ones who use our machines – well, all the bull that micro manufacturers throw at us, through the pages of magazines such as your own, just helps to make our dreary lives more interesting.

Michael Sleight
Doncaster
S Yorks

Mixed modes

My thanks to Brian Cadge for his article (Vol 4 No 41) on mixed modes for the Amstrad 464 Just one small problem – I have the 664 and the program won't work

For the 664, the fix is simple Change Lines 70 and 180 to read as follows

```
70 IF cs < >23323 THEN PRINT "DATA ERROR – Check listing ", CHR$(7) STOP 180 DATA 2A, 20, A6, 22, EC, BD C9 CD 06 B9 CD 61, 0D, 21, 00, 00, CD, 35, 0B, C3, 3E, 0D
```

John L Taylor
Newbury
Berks

Addicts hints

As an addicted adventurer, I would like to say how pleased I was with the October 17 issue of your magazine, in particular the four pages of hints for – great!

June Rowe
46 Hurdon Way
Launceston
Cornwall

Micro Waves

Micro Live is getting a bit like the little girl in the nursery ryhme – when it is good it is very very good, but when it is bad it is horrid.

Two recent and very contrasting episodes exemplify this Three weeks ago the programme presented a pre-recorded half hour 'special' on the subject of computers and microelectronics in the music industry To put it simply, this was the best half hour of telly I have seen for many a year

But last week it was back to the studio for a program that, in the main, concentrated on aspects of educational computing

A broad overview of the subject was given with a number of relevant examples and statistics – then attention was turned to the impending closure of the MEP a government organisation which helps subsidise the development of otherwise uneconomic educational software Here was a chance for *Micro Live* to show itself as an aware campaigning force speaking for the computing community But I felt the interviewing lacked incisiveness and important points were missed. The education slot then finished with Lesley Judd whipping the audience into a frenzy to welcome an incoming bike messenger

The rest of the programme was largely taken up with a live example of the printing of that week's information sheet – via radio The treatment was breathless and trivial and leads one to ask big questions about the 'live' aspects of *Micro Live*

Now that micros have passed beyond the magic lantern stage do we really need the 'live' proof that it's not all done by mirrors?

John Cook

Micro Magic

Side Table

Popular Computing Weekly

Micro Magic

Popular cassette labels

The Amstrad CPC6128

We are giving away an Amstrad CPC6128 128K micro – worth £399 – every seven days until Christmas Not only that, but every Micro Magic card is a winner – every card wins a runner-up prize of free Special *Popular Computing Weekly* cassette labels

How to find out if you win this week

To find out if you are a prize winner this week this is what you must do

1) Key in the computer program listing printed here into your micro and *Run* the program.

2) Input your special **Micro Magic** numbers as data in the program when requested and press *Enter*

3) The program will tell you if you have won a prize this week and what it is

4) If you have won a prize you can claim it by filling in the coupon on the back of your special **Micro Magic** card Then send the completed card off to: Micro Magic, Popular Computing Weekly, 12-13 Little Newport Street, London WC2H 7PP.

Don't forget to fill in both your name and address, and also both your winning **Micro Magic** answer from this week and your special **Micro Magic** number.

5) If you haven't won this week, don't give up hope Keep your **Micro Magic** card and use it to find out if you win with next week's **Micro Magic** computer program The same card will last you right through to Christmas, so don't throw it away – you could miss the opportunity to win

Micro Magic: Week 6 Program listing

This week's winning Micro Magic Numbers: 3896 and 291832

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Micro Magic cards can only be obtained in line with the criteria outlined by Sunset Press Participants are entitled to only one card each. Cards and accompanying documentation can be obtained free of charge by writing to Sunset Press 12-13 Little Newport Street London WC2H 7PP

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as Amstrad's are only as good as the hardware they're loaded into

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Three into one won't go

Jeff Naylor *takes apart one of the first production models of Commodore's new three-in-one micro – the C128 – now at last in the shops*

You can now go down to the High Street and buy Commodore's new computer, the C128, for the sum of £269 99

In addition, the people from Commodore would also like to relieve you of £199 99 for the 1570 disc drive and £299 99 for their new dual standard monitor

The machine operates in three modes First it is fully compatible with the Commodore 64. All C64 peripherals and C64 software will run on the C128 in C64 Mode In C128 Mode the machine offers 128K of Ram and a considerably enhanced version of Commodore Basic – Basic 7 0 In CP/M Mode the C128 will run disc software written under the CP/M operating system

The C128 is technically a complex machine with two processors – a 6502 for C64 and C128 Modes and a Z80 chip enabling it to run in CP/M Mode

It is really three micros one box.

Hardware: stylish appearance

Open the C128's box and you will find the computer, a power supply, two manuals, a TV lead, two floppy discs and various pieces of paper The machine itself is a stylish light beige unit measuring an enormous 17 by 13 inches, at its highest point only 2½ inches off the desk.

The keys are steeply raked but independantly sprung, very pleasant to use and seem quite robust The main qwerty block matches that of the C64, and the five function keys placed top-right simulate the C64's vertical function keys In 128 Mode these operate as programmable function keys, with useful default settings such as *List* and *Run* A numberical keypad is provided, complete with *Plus*, *Minus* and *Enter* keys. The remaining groups contain four cursor keys, and various additional functions such as *Help*, *40/80 Column* and *Caps Lock*. One feature of the keyboard shows particular attention to detail: a small pip is moulded on the F and J keys so that touch typists can find their rest position.

The collection of ports around the back and side edges of the C128 is comprehensive. One reservation – they are often unique to Commodore Two Atari-style joystick ports power and reset switches and a power socket are on the right-hand edge. Along the back is a C64-type cartridge/expansion port, CN2 cassette port, serial, video, RF and RGBI sockets and finally a user port in the form of a printed-circuit board edge connector The quality of the connectors is a little disappointing, but as all the C64 peripherals need to fit, Commodore had little room for improvement

Turning the C128 upside-down reveals a Made in England label and six screws holding the case together. Undoing these and splitting the unit open shows nothing other than a metal screen covering the printed-circuit board and a harness of wires connecting the keyboard. The screen serves two purposes. it shields the micro from RF interference and strips of it are bent downwards to press against some of the larger chips to dissipate heat. When the shielding is finally removed a large, well-made and complex circuit board is revealed

The C128's Ram is provided by 16 64K bit Dram chips. A host of Roms are scattered around the board, including two Eproms, and there is a spare Rom socket for a foreign language Rom

The C128 has two CPUs an 8502 which is compatible with the C64's 6502/6510 range but can operate at double the clock speed, and a Zilog Z80 to allow CP/M operation.

Home computer design over the last few years has concentrated on keeping down the number of chips and thus production costs It is therefore a little suprising to find so many small TTL devices on the 128's circuit board. No doubt many of them are used to arbitrate between the two CPUs

C64 compatibility

The centre of the printed-circuit board holds another screening can which is divided into two sections, one for each video chain The manner in which an 80-column screen has been added to the C128 seems to have been dictated by the need for C64 compatibility The VIC chip, which provides the 40-column text, hi-res and multicolour modes as well as eight sprites will be familiar to all C64 owners. The output of this chip can be viewed in two ways: on a TV set tuned to channel 36 via the RF socket, or on a suitable monitor plugged into the video connector The 80-column output is generated by a completely independent signal chain and its output is only sent to the RGBI socket. The upshot of this is that if you want to use both outputs you need two monitors or Commodore's special dual monitor (£299 99) – even with this you will need to manually switch the monitor between inputs.

The RGBI 80-column connector provides red, green, blue and Intensity outputs to provide a sixteen-colour display Although bit-mapped graphics are possible from machine-code and Commodore has demonstrated these at various shows, these are not possible from Basic and no information appears in the manual on how to achieve them in machine-code

If you wish to use this mode for word-processing and CP/M programs, all you need is monochrome and there are suitable signals available on the connector Commodore has yet to announce a monochrome 80-column monitor: adapting a green-screen should present no problems for peripheral manufacturers or even hardware dabblers

The sound generating hardware of the C128 consists of the SID chip from the C64, which plays through the TV speaker and also emerges from the 40-column video connector. There is no internal loudspeaker or output to the 80-column socket

To make the C128 behave as a C64, you simply hold down the Commodore key during power-up or enter *GO 64* when in 128 Mode This switches in the C64 Roms and Commodore says that all 64 software will run directly on the 128 Not only that but you get the C64 Basic

continued on page 12 ▶

Rom as well – if you want it. If there are any obscure problems, Commodore's rivals will doubtless let us know soon enough. Hardware compatibility is also guaranteed. You should be able to disconnect your 64, hook up a 128 in its place, and carry on as if nothing had happened.

C128 mode

Main features of 128 Mode are the provision of Basic 7.0 and the fact that it has 122365 bytes of memory available to it.

The Ram is split into two banks. Bank 0 holds system variables, screen Ram and Basic programs. With just a text screen enabled, 58109 bytes are available for your programs. Using a high-res screen still leaves 48893 bytes, and this is for programs alone. The variables are stored in the second bank and you start with 64288 bytes free.

Version 7.0 of Commodore Basic is a vast improvement on the 2.0 version provided on the 64. Using the old Basic as a core, and retaining the screen editor, many extra commands and functions have been added. Programmers aids include *Auto*, *Delete*, *Renumber* and *Help*, which highlights the point in a line of Basic at which the last error occurred.

Command structures have been extended to provide *If/Then/Else* and *Begin/Bend* allows the *Then* and *Else* statements to occupy multiple lines. Another structure is *Do/Loop*; it has *While* and *Until* conditions as well as an *Exit* command.

These should eliminate the need for *Goto*, but there is no provision for procedures, so *Gosubs* still need to be documented and cannot use local variables in the manner of user-defined functions.

Four graphics modes can be enabled through Basic: standard bit-map (two colours, 320 pixels * 200 pixels), multicolour bit-map (four colours, 160 pixels * 200 pixels) and split-screen variations of these, with text occupying a definable area at the bottom of the screen. The split has a tendency to flicker, so you may wish to use the *Char* command to print to the graphics screen. *Box*, *Circle*, *Paint*, *Draw To* and *Locate* are all provided, as well as a *Scale* command. None of the graphics commands are blindingly fast. If you want good animation effects then you must turn to the VIC chip's sprites and again, Basic 7.0 has been provided with a number of new commands to help you. *Sshape* and *GShape* can translate screen information to and from strings (a technique useful for ordinary graphics) and *Sprsav* defines a sprite according to a string. *Sprite* switches on sprites and selects their colour, size and priority. *Movspr* alters their position or sets them off on a trajectory.

The most powerful new command is more like a utility. *Sprdef* calls up a large-scale picture of the sprite alongside the real thing and you use cursor keys to design you shape. People aren't going to buy many sprite editing programs with this command already in residence.

Controlling the sound is done in three main ways: programming the SID chip to produce different sounds, using the *Sound* command for one-off noises, and using the complex *Play* command for playing tunes. The C128 has ten default envelopes which rougly relate to various musical instruments. Most of them sound like the offering of a very cheap synthesiser. You can redefine them with the *Envelope* command and make further improvements with *Filter*. *Play* uses these envelopes to translate strings into music; the string contains the notes (as letters A to G) and may also hold octave, sharp, flat, rest, duration, envelope and voice switching information. Tempo and volume can also be controlled. If you have the patience you will achieve some good results, but note that *Play* is not interrupt-driven. Basic hangs up until the entire string is played.

The original C64 disc commands were poor. Basic 7.0 does away with # 8 suffix and having to print codes to the disc through a command channel. Sensible names such as *DSave*, *DLoad* and even *Rename* will come as relief to seasoned 64 users.

A number of additional functions have been added, such as *Hexs*, *Dec*, *Instr* and *Xor*. *Pen* will return the screen position of a light pen, *Joy* gives joystick information and there also functions for interogating screen characteristics and contents.

Two final features for programmers are worthy of attention. Basic keywords can be called up with an initial letter or letters followed by a shifted letter. These do not display as keywords until the program is listed. Machine-code users will welcome the provision of a *Monitor* command that evokes a fairly powerful utility that includes mini-assembler.

A complete list of Basic 7.0 keywords is given in Table 1.

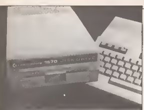
It is important not just to look at the new Basic in terms of its improvements over C64 Basic – this would make almost any Basic look good – but also to compare it with the competition. In 40-column mode you cannot mix upper-and lower-case letters. This one flaw alone gives the Basic a dated look. The strong points of version 7.0 are in the graphics and music fields. If you want to write games in Basic then this may be the computer for you, but don't expect them to run particularly fast.

On the subject of speed, the C128 has *Fast* and *Slow* commands. The 8502 CPU can be made with the first command to run at 2Mhz, but the poor old VIC chip cannot keep up. Issue the *Fast* command and the 40-column screen goes blank. If you wish to have a continuous graphic display, you must stick to the *Slow* 1Mhz clock speed. This is further indication of C64 compatibility hampering the design.

1570 disc drive and CP/M

To accompany the C128, Commodore has developed two new 5½ inch disc drives. The 1571 is a double-sided drive, while the 1570 is single-sided. Only the 1570 is so far available. To call it chunky would be kind – no improvements over the old C64 1541 drive have been made either in terms of size or weight – it is even in the same case as the 1541, now pleasantly cream to match the 128. It is substantially faster though than the 1541. The drive overshadows the C128, taking up almost as much desk space. Connections for the disc are simple: mains supply and serial in and out plug into the back. And an on/off switch is the only control.

It can read either C64 discs configued for the 1541 drive in C64 Mode or the



CP/M Modes

Commodore uses a method of recording on to the disc called GCR (Group Code Recording). The 1570 uses this system when dealing with both 1541 and its own format discs

Most CP/M disc formats though use a different system, MFM (Modified Frequency Modulation) and Commodore's new drives can work in that manner when running under CP/M. When used in C128 mode the 1570 can store 170K on 35 tracks and the number of sectors per track varies between 17 and 21. The drive is supplied with a demo disc that includes a DOS shell program. This can reside in memory (it occupies 16K) at all times and be called up by pressing *F1*. The shell eases disc operations, prompting you through such tasks as formatting, cleaning up and copying discs, as well as deleting, restoring, renaming and copying files. The program works well. The drive is certainly faster than the 1541 – the DOS shell only takes only 15 seconds to load.

With the 1570 drive (or 1571), the C128 runs CP/M version 3.0 (CP/M Plus). This is supplied on disc when you buy the C128 and is the same version of CP/M used by the Amstrad 6128, but with a few omissions (no scrolling banner error messages, less in the way of DR utilities).

Although the C128 thinks it can operate CP/M in 40-column mode, and provides upper and lower case characters, you have to scroll the screen from side to side with *Ctl* and the cursor keys to view all 80 columns. It drives you potty just looking at directories and the *Help* program, let alone trying to run serious software.

An 80-column monitor is therefore a must. One advantage of the C128 CP/M system over the Amstrad offering is the disc format – the 1570 can read no less nine MFM formats from 5¼ inch disc, so off-the-shelf software should be easily obtainable.

The manuals supplied with both computer and disc drive were good, but absolute beginners may need an introduction to programming that does not concentrate so much on the graphics and sound features of the C128.

The *System Guide*, however, contains a full description of all the Basic commands in alphabetical order, as well as details sometimes missed in other manuals – memory maps, connector details and the like.

TABLE 1 Summary of Basic 7.0 keywords

ABS	DIRECTORY	INPUT	PRINT USING	SPC(
APPEND	DLOAD	INPUT#	PUDEF	SPRCOLOR
ASC	DO	INSTR	RBUMP	SPRDEF
AUTO	DOPEN	INT	RCLR	SPRITE
BACKUP	DRAW	JOY	RDOT	SPRSAV
BANK	DSAVE	KEY	READ	SQR
BLOAD	DVERIFY	LEFT$	RECORD	SSHAPE
BOOT	EL	LEN	REM	STASH
BOX	END	LET	RENAME	STatus
BSAVE	ENVELOPE	LIST	RENUMBER	STEP
BUMP	ER	LOAD	RESTORE	STOP
CATALOG	ERR$	LOCATE	RESUME	STR$
CHAR	EXIT	LOG	RETURN	SWAP
CHR$	EXP	LOOP	RGR	SYS
CIRCLE	FAST	MID$	RIGHT$	TAB(
CLOSE	FETCH	MONITOR	RLUM	TAN
CLR	FILTER	MOVESHAPE	RND	TEMPO
CMD	FOR	MOVSPR	RREG	TI
COLLECT	FRE	NEW	RSPCOLOR	TI$
COLINT	FNxx	NEXT	RSPPOS	TO
COLLISION	GET	ON ... GOSUB	RSPR	TRAP
COLOR	GETKEY	ON ... GOTO	RSPRITE	TROFF
CONCAT	GET#	OPEN	RUN	TRON
CONT	GOSUB	PAINT	RWINDOW	UNTIL
COPY	GO64	PEEK	SAVE	USR
COS	GOTO	PEN	SCALE	VAL
DATA	GRAPHIC	PI	SCNCLR	VERIFY
DEC	GSHAPE	PLAY	SCRATCH	VOL
DCLEAR	HEADER	POKE	SGN	WAIT
DCLOSE	HELP	POS	SIN	WHILE
DEF FN	HEX$	POT	SLEEP	WIDTH
DELETE	IF ... GOTO	PRINT	SLOW	WINDOW
DIM	IF ... THEN ... ELSE	PRINT#	SOUND	XOR

Who wants it?

The crunch. Who is going to buy the C128? For non-Commodore 64 owners it simply doesn't offer good value for money.

It isn't a bad computer at all, but at a shade less than £800 for a sensible system it seems ridiculously expensive. Amstrad's competing system, the 6128, also with 128K, monitor, disc drive and CP/M 3.0 costs only £399.

With the C128 you are paying a great deal for C64 compatibility. It is true that the C64 has a larger library of software than the Amstrad, but the price of making the C128 also CP/M compatible has been a high one.

Because the C64 is 6502 processor-based and because CP/M requires a Z80 the C128 has had to be a twin-processor micro – which involves a considerable number of extra components on the circuit board and increasing the manufacturing cost substantially. Amstrad has the advantage that the 6128 is Z80 based – so CP/M comes naturally to the machine.

Obviously the C128 will appeal to C64 owners wishing to up-grade without losing the ability to run their present C64 software collection. But even here Commodore seems to have misjudged things.

Any C64 owner with a 1541 disc drive will find that to do anything worthwhile on the C128 that cannot be done on the C64 a new disc drive – at £199.99 – is needed. And the 1541 then becomes redundant.

It's the same with the C64's 1501 colour monitor. If you already have a 1501 monitor you cannot use it in 80-column mode with the C128. In fact it isn't easy to use most other 80-column monitors with the C128. Most are RGB monitors and the C128 provides an RGBI output. So another £299.99 must be spent. The CP/M itself may be compatible for C64 upgrades, but the peripherals – by and large – are not much use in C128 or CP/M modes.

To put the C128 in perspective. If you must have C64 compatibility as well as CP/M then you can buy an Amstrad 6128 system and a Commodore 64 plus cassette drive (using it with your domestic TV) and still have spent £200 less than the cost of the C128 system with disc and monitor.

Commodore cannot not be serious! The C128 is a neat system, but until its prices comes way down it cannot be considered as a serious contender.

Unhappy mix

Program *World Cup Soccer* **Micro** Spectrum **Price** £8 95 **Supplier** Macmillan Software, 4 Little Essex Street, London WC2R 3LF

Well, Brian, Kevin Toms has been top *Football Manager* for longer than most people can remember but now there's a challenger, Macmillan, which is going for the big one – the World Cup

Certainly it looks good as they come on to the pitch with that colourful strip and a "programme" booklet that's jam packed with football facts

It's an education to watch them warming up The first side of the tape is taken up with a database on the World Cup, just the thing if you want to know how Australia have fared in international soccer It's all amusingly presented and as a bonus there's a one or two player quiz

On to the match itself and at the start both sides seemed well balanced, faced with the standard managerial problems of choosing the best players and configurations, dealing with illness and suspensions Then, in the second half Macmillan scored an own goal with points being awarded for the manager's performance in arcade tests of heading and shooting ability, both of which resemble that old chestnut, *Breakout*.

I can't help thinking that it's this sort of thing that's turning soccer into a Cinderella sport. Kevin Tom's match highlights remain more compelling to the hardened manager, though youngsters from the amateur leagues may not agree For my money though, Mamillan's boys demonstrate an unhappy mix of serious strategy and fancy footwork in an attempt to please all of the people all of the time

John Minson

Advanced

Program *Lattice C* **Micro** QL **Price** £99 95 **Supplier** Metacomco, 26 Portland Square, Bristol BS2 8RZ

As more powerful home computers appear more advanced versions of the most important languages have also appeared

One computer which now has quite a range of languages is the QL, the latest of which is *Lattice C*

Unlike GST's much cheaper version C, which has a number of significant omissions, this offers seven or 18 decimal precision arithmetic, multi-dimension arrays and data structures, GST's C is considerably cheaper at £59 95 The QL version costs £99 95 compared against £375 for Metacomco's IBM compatible version.

For the money you get a 16K Rom cartridge, three microdrive cartridges and a 200-page manual. When running C the Rom cartridge must always be plugged into the QL – it contains a number of routines needed by the compiler

To help you write programs, Metacomco supplies their standard editor When written, a program is then passed through the compiler. If no errors are found the resulting code then maybe linked with the function library

The manual, while not designed to teach C, does give detailed information on each of the standard functions available, as well as a number of extra functions to call up QDos routines Unlike the GST C which has a library giving commands similar to those in SuperBasic, Metacomco's version allows access to the QDos traps

For those people who are looking for a full specification C compiler, then this is the one to buy. While it doesn't seem cheap it is about a quarter of the cost of the same program, the IBM PC

That said, people who just want to get the idea of C and write small programs in it may well find the cheaper C from GST a better buy

Roger Thomas

Evil force

Program *Shadow of the Unicorn* **Micro** Spectrum **Price** £14 95 **Supplier** Mikro-Gen.

Packages which include hardware add-ons to give more available memory and a more sophisticated program have been promised by various companies for some time now (remember Imagine's megagames?)

Now Mikro-Gen has launched *Shadow of the Unicorn*, a 64K graphic adventure for the Spectrum, which includes a book, joystick port, and a 16K interface to handle the extra memory — all for £14 95

So has MikroGen succeeded where others have failed? They have promised, and have come up with the goods, but is the software any good and moreover what can be done with a 64K Spectrum?

The interface itself is neat and compact and has a joystick port built in, although the keyboard can be used instead Before loading the game, the interface is connected and when powered up, automatically runs through a series of system checks before accessing a *Play/Save* menu from which transfer to microdrive is one of the options

What we have here is a combination of *Tir Na Nog* in graphic style and puzzle play, and *Lords of Midnight* in character control and strategy

The plot centres around a Tolkien like land of two kingdoms whose principal heroes are joined together to recapture an evil force that has been released on them. Ultimately, you can have control of up to ten characters, but they have to be found throughout the landscape before control is available

All the figures are animated albeit in a crude sort of way, and movement, although only left and right, is by compass directions *à la Tir Na Nog* and apart from a medieval tune at the beginning and a few beebs and burps, there is no real sound to speak of. So far so ordinary, so where does the 64K come in? It's in the sheer size of the playing area which is vast, and although a map is provided, there seems to be many more locations than are recorded on it

As a game it's nothing new — another arcade adventure puzzle and I'm not convinced that just the size of the playing area is that necessary to involve extra hardware, which could become faulty and nullify the game completely

Still, all credit to Mikro-Gen for producing a first and a nice book to go with it too But I feel you have to look at the package, at game value and on that score it's a bit of a let down for the price

Andy Moss



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Shooting star

Program *Tau Ceti* **Micro** Spectrum **Price** £9.95 **Supplies** CRL Group, CRL House, 9 Kings yard, Carpenter's Road London E15 2HD

Stardate 5 November, 2171. I'm sitting in my ground skimmer, gliding between the towers of an intergalactic ghost town, now inhabited only by robot guards. It is 31 years since Encke's syndrome wiped out the star colonies, and 19 since the meteor scrambled the automatic systems on Tau Ceti. My mission is to locate fragmented core elements, reconstruct then and return them to the Main Reactor in *Centralis*, a city so heavily defended it makes what I've seen till now seem like nothing. The skimmer is well supplied with both standard guided and anti-missile missiles plus lasers, a 360 degree scanner, four-way view screens. And because the planet's day is only about one earth hour long it has infrared sights and flares. The scanner can get repaired or re-equipped in any major building it docks with.

I'm worried, though, because as I search for a Reactor Substation, which may contain a core elements, I'm being tracked by everything from the mere nuisances of spheres to the deadly Hunter Mk III saucers against which my missiles are useless. As I prepare to warp to another city I begin to wonder what my reception will be. The map says low defences, but is it accurate?

Stardate 5 November, 1985. Outside fireworks burst at the night sky, but none is so beautiful as the shooting stars and sunset on Tau Ceti III. It not only contains some of the finest 'solid' 3D graphics I've seen but their responses to changing light are brilliant – just watch the flicker of a flying flare. The attention to detail is amazing too, from the 'intelligent' map to the redefinable single keys and inclusion of an on screen note pad. Quite how so much is crammed into 48K is beyond me.

The result is a real-time strategy adventure that successfully includes combat elements in a wholly convincing scenario. The only criticism I could find was that the instructions neglect to mention that 'V' controls the four-way view. It will take ages to complete.

Today was originally supposed to be the launch date of Spectrum *Elite*, now sadly postponed. CRL has stolen a lead to provide us with that much delayed space game's planetary equivalent. *Tau Ceti* is a serious contender for Game of the Year.

John Minson

Powerful

Program *Amstat 1* **Micro** Amstrad CPC range **Price** £14.95 **Supplier** S C Coleman, 33 Leicester Road, Ashby-de-la-Zouch, Leics LE6 5DA

In the search for Useful Things To Do With Your Computer I always felt that statistics packages seem to be inexplicably thin on the ground. There must be thousands of school and college students, let alone professional people, for whom a decent statistics utility would be an invaluable aid. Many such programs can, of course, be bought under CP/M but they typically change hands at anything between £60 to over £100. The point is that the programming effort involved to produce one is not huge – you are paying for the expertise involved.

The authors of *Amstat* identified this situation in the market and the resulting program provides summary stats of data typed in, means, variances, confidence intervals, t-tests, correlations, one and two way analysis of variance and regression analysis. *Amstat 2* is planned to cover non-parametic tests and further releases will build up into a very powerful range.

The programs are extremely simple to use, largely menu driven, and on the whole well presented. A genuinely useful bargain buy.

Tony Kendle

High quality

Program *Genplot* **Micro** Any Amstrad CPC **Price** £29.95 **Supplier** Al-Tukhaim Micro Centre Ltd, Minerva House, Spaniel Row, Nottingham, NG1 6EP.

At last here is a graph plotting program for the CPCs that lets you use a pen plotter as well as a dot printer for producing hard copy. Short of spending nigh on a thousand pounds dot printers are just not good enough as diagonal lines and anyway they usually work by producing a screen dump which just reflects the resolution of the screen. *Genplot's* plotter options can create a drawing of very high quality and containing information that is too detailed to fit on to the monitor screen.

The rest of the package is more standard, but still good. There is room in the program for 750 data values, which can be divided into up to 15 data sets. You are provided with full facilities for entering and editing the data, transforming it, fitting polynomial curves etc. You are also told how to create a *Genplot* data file from another program, eg, a maths program you have written in Basic. Once the data is in you can plot it as a bar chart, a histogram, a line graph with or without symbols, pie chart or high-low chart for showing the average of a range of figures.

There is a tape version available for £14.95 with fewer features.

Tony Kendle

Number conversion

Three useful new commands for SuperBasic - from the keyboard of ***James Lucy***

The dialect of Basic in the QL is one of the best available, with a wide range of facilities and the valuable advantage that it can be extended to suit the needs of the user. Novice machine code programmers and people involved in teaching modern maths will be aware, however, that the QL lacks a facility to convert decimal numbers to the much favoured hexadecimal, an omission which makes peeking around amongst the system variables and the Rom rather time consuming.

It is of course possible to write Superbasic functions to do the conversion, but these will disappear with every new or load. This week's program provides a machine code extension to Superbasic which will convert hexadecimal numbers to their decimal equivalent; as the code is loaded into the resident procedure space it remains available until the machine is reset and operates in every way like the functions built in to the Rom.

The program adds three new keywords - HEXB, HEXW and HEXL. The first two functions adjust automatically for two's complement arithmetic - ie, HEXB will accept numbers from -128 to 255. Both -1 and 255 will be returned as 'FF'. This feature is not implemented on HEXL because it is unusual to require very large negative hexadecimal numbers - the largest hex numbers in the QL are likely to refer to memory addresses and the memory map extends only to $ffff (1048576 dec). The functions are used in the same way as those built in, with the argument enclosed in brackets.

To ascertain the hex equivalent of say 32767 type print HEXW(32767) and the answer 7fff will be returned. HEXL(32767) returns 00007fff and HEXB(32767) will produce a bad parameter error because, of course, 32767 is too big for a byte.

The method of operation of the program is fully explained in the assembler listing, which is suitable for the Metacomco assembler - enter all '£' signs as hashes. Those without an assembler can use the Basic microdrive cartridge removed before running, although the checksum should detect errors. This is a wise precaution for any machine code program - two mistakes in the typing in of data which compensate, or the inadvertent insertion of extra zeroes are not trapped by the checksum and can create chaos!

Next week the complementary program to convert hex numbers to decimal will be published. In the meantime, if you don't feel up to all that typing - or if you're just short of microdrives - you can obtain both conversion programs on microdrive, from me. Send £2.25 plus a strong SAE to 5 Rookery Lane, Great Totham, Essex, CM9 8DF.

```
100 REMark    Basic loader for keywords
110 REMark    HEXL, HEXW and HEXB
120 RESTORE 1000
130 start=RESPR(512):checksum=0
140 FOR byte=0 TO 363
150  READ val:POKE start+byte,val
160  checksum=checksum+val
170 END FOR byte
180 IF checksum <> 26283:PRINT "Wrong Data!":STOP
190 CALL start
200 PRINT "Keywords HEXL,HEXW,HEXB  available"
1000 DATA 67,250,0,10,52,120,1,16,78,146
1010 DATA 78,117,0,0,0,0,0,3,0,26
1020 DATA 4,72,69,88,76,0,0,82,4,72
1030 DATA 69,88,87,0,0,180,4,72,69,88
1040 DATA 66,0,0,0,52,120,1,24,78,146
1050 DATA 74,128,102,0,1,42,12,67,0,1
1060 DATA 102,0,1,34,65,250,1,34,145,206
1070 DATA 52,120,0,254,78,146,65,250,1,22
1080 DATA 65,232,0,8,114,10,97,0,0,226
1090 DATA 116,7,97,0,0,236,85,137,61,188
1100 DATA 0,8,152,0,96,0,0,236,52,120
1110 DATA 1,24,78,146,74,128,102,0,0,234
1120 DATA 12,67,0,1,102,0,0,226,36,54
1130 DATA 152,0,12,130,0,0,255,255,110,0
1140 DATA 0,212,12,130,255,255,128,0,109,0
1150 DATA 0,202,74,130,107,2,96,6,6,130
1160 DATA 0,1,0,0,84,137,61,130,152,0
1170 DATA 65,250,0,184,145,206,52,120,0,252
1180 DATA 78,146,65,250,0,172,65,232,0,4
1190 DATA 114,6,97,0,0,120,116,3,97,0
1200 DATA 0,130,85,137,61,188,0,4,152,0
1210 DATA 96,0,0,130,52,120,1,18,78,146
1220 DATA 74,128,102,0,0,128,12,67,0,1
1230 DATA 102,0,0,120,52,54,152,0,12,66
1240 DATA 0,255,110,0,0,108,12,66,255,128
1250 DATA 109,0,0,100,74,66,107,2,96,4
1260 DATA 6,66,1,0,82,137,29,130,152,0
1270 DATA 65,250,0,84,145,206,52,120,0,250
1280 DATA 78,146,65,250,0,72,65,232,0,2
1290 DATA 114,4,97,0,0,20,116,1,97,0
1300 DATA 0,30,85,137,61,188,0,2,152,0
1310 DATA 96,0,0,30,45,73,0,88,52,120
1320 DATA 1,26,78,146,34,110,0,88,78,117
1330 DATA 83,137,29,160,152,0,81,202,255,248
1340 DATA 78,117,120,1,45,73,0,88,112,0
1350 DATA 78,117,112,241,78,117,0,0,0,0
1360 DATA 0,0,0,0
```

```
* Program to add functions HEXB, HEXW, HEXL to Superbasic
* functions return a string containing the hex equivalent of a decimal argument
*
BP.INIT     EQU     $110        QDOS routine to link in procs. and fns
CN.ITOHL    EQU     $FE         QDOS convert long integer to 8 digit hex
CN.ITOHW    EQU     $FC         Word integer to 4 digit hex conversion
CN.ITOHB    EQU     $FA         Byte integer to 2 digit hex conversion
BV.RIP      EQU     $58         Basic arithmetic(RI) stack pointer
CA.GTINT    EQU     $112        Get integer parameters for Basic
CA.GTLIN    EQU     $118        Get long integer params
BV.CHRIX    EQU     $11A        Reserve/check space on RI stack
*
            LEA     PROCDEF,A1  Point to table of procs/fns
            MOVE.W  BP.INIT,A2  load vector to link them in
            JSR     (A2)
            RTS                 and return to Superbasic( the caller )
*
PROCDEF     DC.W    0,0,3       No procs, end of proc marker, 3 fns
            DC.W    HEXL-*      Pointer to first fun. relative to task
            DC.B    4,'HEXL',0  Number of characters, then text
            DC.W    HEXW-*      As above
            DC.B    4,'HEXW',0  ditto, 0 to align
            DC.W    HEXB-*      ditto
            DC.B    4,'HEXB',0  ditto
            DC.W    0           End of functions
*
HEXL        MOVE.W  CA.GTLIN,A2 Get a long word integer from Basic
            JSR     (A2)
            TST.L   D0          Errors?
            BNE     ERR_EXIT
            CMPI.W  #1,D3       Only one parameter?
            BNE     BAD_EXIT    no, so exit
            LEA     BUFF,A0     Point to buffer
            SUBA.L  A6,A0       and make it relative to A6
            MOVE.W  CN.ITOHL,A2 Convert LONG word on stack to ASCII and
            JSR     (A2)        put it into the buffer
            LEA     BUFF,A0     Point to start of buffer again
            LEA     8(A0),A0    and [illegible]
            MOVEQ   #10,D1      Make sure we have [illegible] bytes
            BSR     CHK_RI      on RI stack
            MOVEQ   #7,D2       Set up loop counter for eight circuits
            BSR     FEN_LOOP    and move bytes from buffer to RI stack
            SUBQ.L  #2,A1       Make room for a word which
            MOVE.W  #8,0(A6,A1.L) gives number of [illegible] in our string
            BRA     OK_EXIT     and go to good return routine
*
HEXW        MOVE.W  CA.GTLIN,A2 Get a long word integer from Basic
            JSR     (A2)
            TST.L   D0          Errors?
            BNE     ERR_EXIT
```

```
         CMPI.W   #1,D3              Only one parameter?
         BNE      BAD_EXIT           no, so bale
         MOVE.L   0(A6,A1.L),D2      Copy TOS to D2
         CMPI.L   #65535,D2
         BGT      BAD_EXIT           Can't be greater than 65535

         CMPI.L   #-32768,D2
         BLT      BAD_EXIT           or less than -32768
         TST.L    D2                 Is number negative?
         BMI.S    ADDWIN             If so add 65536 to reverse 2's complement
         BRA.S    OK2                and go to good return routine
ADDWIN   ADDI.L   #65536,D2
OK2      ADDQ.L   #2,A1              Leave room for two bytes on RI stack
         MOVE.W   D2,0(A6,A1.L)      and move the low of D2 to it
         LEA      BUFF,A0            Point to buffer
         SUBA.L   A6,A0              and make it relative to A6
         MOVE.W   CN_ITOHW,A2        Convert word on stack to ASCII and
         JSR      (A2)               put it into the buffer
         LEA      BUFF,A0            Point to start of buffer again
         LEA      4(A0),A0           and move to fifth byte
         MOVEQ    #6,D1              Make sure we have room for six
         BSR      CHK_RI             bytes on RI stack
         MOVEQ    #3,D2              Set up loop counter for four circuits
         BSR      PSH_LOOP           and move the bytes from to stack
         SUBQ.L   #2,A1              make room for a word which
         MOVE.W   #4,0(A6,A1.L)      gives number of chars
         BRA      OK_EXIT            and make a good return
*
BYTE     MOVE.W   CA_GTINT,A2        get a word integer from basic
         JSR      (A2)
         TST.L    D0                 Errors?
         BNE      BAD_EXIT
         CMPI.W   #1,D3              Only one parameter?
         BNE      BAD_EXIT           no, so bale
         MOVE.W   0(A6,A1.L),D2      copy TOS to D2
         CMPI.W   #255,D2
         BGT      BAD_EXIT           Can't be greater than 256
         CMPI.W   #-128,D2
         BLT      BAD_EXIT           or less than 128
         TST.W    D2
         BMI.S    ADDIB              If less than 0 add 256 to sort out
         BRA.S    OK
ADDIB    ADDI.W   #256,D2

OK       ADDQ.L   #1,A1              Leave room for just one byte on RI stack
         MOVE.B   D2,0(A6,A1.L)      and move the lsb of D2 to it
         LEA      BUFF,A0            Point to buffer
         SUBA.L   A6,A0              and make it relative to A6
         MOVE.W   CN_ITOHB,A2        Convert byte on stack to ASCII and
         JSR      (A2)               put it into the buffer
         LEA      BUFF,A0            Point to start of buffer again
         LEA      2(A0),A0           and move to third byte
         MOVEQ    #4,D1              Make sure we have room for four
         BSR      CHK_RI             bytes on RI stack
         MOVEQ    #1,D2              Set up loop counter for two circuits
         BSR      PSH_LOOP
         SUBQ.L   #2,A1              Make room for a word which
         MOVE.W   #2,0(A6,A1.L)      gives number of chars
         BRA      OK_EXIT
*
* Subroutine to check/reserve RI stack space: bytes reqd in D1.L
*
CHK_RI   MOVE.L   A1,BV_RIP(A6)      Save RI pointer
         MOVE.W   BV_CHRIX,A2        Use QDOS reserve utility
         JSR      (A2)
         MOVE.L   BV_RIP(A6),A1      Update RI pointer if it was changed
         RTS
*
* Subroutine to move, in reverse order, bytes from buffer to RI stack
* A0 points to end of buffer, number of bytes to move -1 in D2
*
PSH_LOOP SUBQ.L   #1,A1              Make room for a byte
         MOVE.B   -(A0),0(A6,A1.L)   and move char from buffer to stack
         DBF      D2,PSH_LOOP        and again
         RTS
*
OK_EXIT  MOVEQ    #1,D4              Signal a string return
         MOVE.L   A1,BV_RIP(A6)      Update stack pointer
         MOVEQ    #0,D0
         RTS                         and return
*
BAD_EXIT MOVEQ    #-15,D0            bad parameter error
         RTS                         Return
*
BUFF     DS.W     4                  Area to stand up to 8 characters
*
         END
```

Fast loader

Part One of a super-fast load and save routine for Spectrum 48K written by ***John Pickford***

You've probably noticed that in recent months most of the top software houses have started to use turbo-loaders on their games. The reason for this is partly for the increased loading speed and partly for protection. The trouble with these turbo loaders is that they are notoriously unreliable, especially for those with old cassette players or Fuller boxes. You might think it is because of the increased speed but this is not so. The loaders used by Ultimate and Ocean, for example, actually crash on purpose if the volume is too high. This is supposed to stop people making tape-to-tape copies of software, but in practice it just makes them a nuisance.

This article introduces a turbo loader which is both fast (3000 baud – twice the normal speed) and reliable, ie, it doesn't crash on purpose if there is too much noise in the tape. I have also included a basic utility which will make the system very easy to use. It is possible to convert many commercial games, so long as they don't use any fancy protection techniques like headerless files, etc. (Older games are easier to convert.)

The actual save and load routines are based on an article by Alan Turnbull in *Popular Computer Weekly* 17th May 1984. In its original form the system isn't really very useful unless you are willing to write machine-code routines to drive it. This system is completely self-contained. Each file is saved with a 'header', similar to Basic, which includes the filename (16 characters), the start address and the length of the code.

First type in Programs one and two and save them to tape (or preferably microdrive). When run, program one will produce the turbo-save routine and save it to tape for you (easy, isn't it!) and program two will produce and save the turbo-load. I have kept them separate because they both occupy the same area of memory so you can have the maximum amount of space for your programs, also you won't need both of them at once.

Next week, a third program (to produce a new header) and full instructions on how to use the system.

If you haven't the energy (or dexterity) to type in all the listings, I would be happy to supply you with a copy of all the routines for £3.50 (cassette) or £4.50 (microdrive). Send cheques to me at 11 Oldham Avenue, Stockport, SK1 4BG

```
  1 REM Program One
  2
  3 REM1985 J.Pickford
  4
  5 REM Turbo-Save Routine
  6
 10 CLEAR 65214: PRINT "PLEASE WAIT"
 20 LET ad=65215: FOR f=100 TO 117: RESTORE f: READ ch
ek: LET c=0
 30 FOR g=1 TO 10: READ a: POKE ad,a: LET ad=ad+1: LET
 c=c+a: NEXT g: IF c<>chek THEN  PRINT " DATA ERROR IN
LINE:";f: STOP
 40 NEXT f
 50 PRINT  "FINISHED"'' "INSERT A BLANK CASSETTE": SA
VE "TURBOSAVE"CODE 65215,176
 60 PRINT  "SAVE AGAIN?": PAUSE 1: PAUSE 0: IF INKEY$
="y" THEN  GO TO 50
100 DATA 712,53,0,92,54,0,30,120,87,230,25
101 DATA 1414,211,254,62,2,211,254,120,254,0,40
102 DATA 1067,240,221,33,0,91,17,20,0,205,240
103 DATA 1266,254,6,255,11,120,177,32,251,42,118
104 DATA 1418,92,229,221,225,62,10,91,229,204,65
105 DATA 1107,255,53,63,5,229,53,120,31,203,127
106 DATA 774,40,3,33,152,12,0,19,221,43,203
107 DATA 1129,62,2,71,16,254,211,254,238,15,6
108 DATA 1039,164,65,32,203,5,37,242,8,235,6
109 DATA 934,47,16,254,211,254,65,13,6,55,16
110 DATA 1133,254,211,254,1,16,30,8,111,195,55
111 DATA 1236,255,122,179,40,12,221,110,0,124,173
112 DATA 1132,103,62,1,90,109,85,255,100,20,244
113 DATA 851,121,205,120,16,254,46,4,6,33,16
114 DATA 1267,254,211,256,6,31,32,239,5,175,64
115 DATA 1055,203,21,194,40,255,27,221,35,6,29
116 DATA 1323,62,127,219,254,31,208,122,40,194,44
117 DATA 791,253,6,50,16,254,201,0,0,0,0
```

```
  1 REM Program Two
  2
  3 REM1985 J.Pickford
  4
  5 REM Turbo-Load Routine
  6
 10 CLEAR 65214
 11 PRINT  "PLEASE WAIT"
 20 READ ch: LET c=0: DIM x(32): FOR f=1 TO 32: READ x
(f): LET c=c+x(f): NEXT f: IF c<>ch THEN  PRINT "ERROR
 in 99": STOP
 30 LET ad=65215: FOR f=1 TO 32: RESTORE 199+f: LET c
=0
 40 FOR g=1 TO 10: READ a: LET c=c+a: POKE ad,a: LET a
d=ad+1: NEXT g: IF c<>x(f) THEN  PRINT "DATA ERROR IN L
INE:";(f+99): STOP
 50 NEXT f
 60 PRINT  "FINISHED"' "INSERT A BLANK CASSETTE": SAV
E "TURBOLOAD"CODE 65215,316: PRINT  "SAVE AGAIN?": PAU
SE 1: PAUSE 0: IF INKEY$="y" THEN  GO TO 60
 70 STOP
 99 DATA 33202,1048,1069,1740,909,1320,1364,958,1573,1
315,1655,1522,259,1085,872,744,1339,1397,1370,1087,570,
320,450,441,320,636,945,1291,1012,1092,457,1940,805
100 DATA 50,60,92,246,1,50,64,92,205,140
101 DATA 255,221,33,0,91,17,20,0,205,226
102 DATA 254,205,202,255,42,15,91,229,221,225
103 DATA 42,18,91,229,209,55,62,255,30,0
104 DATA 21,243,53,65,5,224,219,254,31,230
105 DATA 32,246,4,79,191,192,205,112,255,40
106 DATA 250,33,21,4,16,254,43,124,181,32
107 DATA 249,205,108,255,48,236,6,156,205,108
108 DATA 255,48,228,62,198,184,48,224,36,32
109 DATA 241,6,201,205,112,255,48,213,120,254
110 DATA 212,48,244,205,112,255,208,121,79,50
111 DATA 0,6,60,24,31,8,32,7,48,15
112 DATA 221,117,0,24,15,203,17,173,192,121
113 DATA 31,79,19,24,7,221,126,0,173,192
114 DATA 221,35,27,8,6,89,46,1,205,148
115 DATA 255,205,62,107,148,203,21,6,86,210
116 DATA 53,255,124,173,103,132,179,32,202,124
117 DATA 254,1,201,205,112,255,208,62,11,61
118 DATA 32,253,193,256,5,85,49,65,55,67
119 DATA 72,73,78,71,44,44,44,46,46,88
120 DATA 32,32,32,32,32,32,32,32,32,32
121 DATA 32,32,32,32,32,32,32,70,79,53
122 DATA 79,68,58,45,32,32,32,32,32,32
123 DATA 32,32,32,32,32,59,32,32,32,32
124 DATA 32,32,76,29,65,68,73,78,71,62
125 DATA 22,215,65,1,215,62,0,215,33,120
126 DATA 255,17,32,0,109,254,253,62,22,215
127 DATA 65,1,215,62,0,215,33,152,255,17
128 DATA 32,0,205,238,255,62,22,215,62,1
129 DATA 215,62,0,215,55,0,91,17,10,0
130 DATA 195,236,235,126,229,213,215,209,225,35
131 DATA 27,132,179,32,244,201,0,0,0,0
```



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This program takes the sound data (created by the first program) off the cassette or disc and places it at &7000. It loads the envelope data directly to &8C0 where the operating system expects to find it. You will be asked for the names of the tune data and envelope files and the number of envelopes in the envelope file. Then it will ask for a starting line number.

On confirmation of that it uses the data to write the envelopes and sound statements in Basic format. It will **Spool* it to cassette or disc under the name *Temp* (you can delete it later). The routine expands the first byte of each note back to the original two bytes needed. To keep the process as simple as possible we have had to sacrifice two possibilities of the four in the first parameter, but they are rarely used anyway and we've never missed them. The two parts we keep are the channel and whether there is synchronisation with other notes.

When you **Exec Temp*, it will load back into the computer and merge with any program already in it. That's why you were asked for a starting line number, in case you are planning to merge it. You can add it to your own program or it can work as a stand alone program. The envelopes are kept separate for maximum flexibility.

```
10REM DATA TO SOUND PROGRAM WRITER
20REM By Cy Noble
30REM 323 North Circular Rd.
40REM London N13 5AH
50ONERROR CLOSE#0:REPORT:PRINT" at line ";
   ERL:END
60CLS:W%=0:env=0
70INPUT"Name of tunedata file "tune$
80INPUT"Name of envelope file "env$
90INPUT"How many envelopes in the file "en
   vno
100INPUT"Starting line number "LIN
110PRINT''"Okay ? (Y/N)"
120*FX21,0
130REPEAT:I=INSTR("NnYy",GET$)
140UNTILI>0
150IF I<3 THEN60
160PROCwait(tune$,"PLAY")
170loadtune$="LO."+tune$+" 7000"
180OSCLI loadtune$
190*MOTOR 0
200PROCwait(env$,"PLAY")
210loadenv$="LO."+env$+" 8C0"
220OSCLI loadenv$
230*MOTOR 0
240PROCwait("SPACE","RECORD")
250VDU26,12,15
260*SPOOL TEMP
270PRINT;LIN;"REM Basic version of ";tune$
280REPEAT
290LIN=LIN+10
300PRINT;LIN;"ENVELOPE ";env+1;
310FORA%=0TO12:B%=A%?(&8C0+(16*env))
320PRINT;",";B%;
330NEXT
340env=env+1
350PRINT
360UNTILenv=envno
370notes=(?&7000)*4-4
380FORA%=&7001 TO (&7001+notes) STEP4
385LIN=LIN+10
390PRINT;LIN;"SOUND ";
400FORB%=0TO3
410C%=B%?A%
420IF B%=0 AND C%>3 C1=C% DIV16:C2=C% MOD16
:C$=STR$(C1)+"0"+STR$(C2) ELSE C$=STR$(C%)
430IFB%=0 PRINT"&";C$;","; ELSE PRINT;C%;",
";
440NEXT:VDU127:PRINT
450NEXT
460*SPOOL
470*MOTOR 0
480PROCinstruct
490END
500:
510DEFPROCwait(a$,b$)
520W%=W%+5:PROCwindow(W%)
530*MOTOR 1
540PRINT"Insert disc or cassete with"CHR$13
4;a$
550PRINT"on it and press"CHR$129;b$
560PRINT"(cassete motor on if you wish to r
ewind)"
570PRINT"<SPACE BAR> when ready"
580*FX21,0
590REPEATUNTILGET=32
600ENDPROC
610:
620DEFPROCwindow(w%)
630VDU26,25,0,24,39,w%,12
640ENDPROC
650:
660DEFPROCinstruct
670VDU26,12
680PRINT'"The data in "tune$" has been spoo
led"'"under the name TEMP."
690PRINT"To recover it as a BASIC program"
700PRINT"Type as follows:-"'
710PRINT"NEW <RETURN>"
720PRINT"*EXEC TEMP"
730PRINT"RUN <RETURN>"
740PRINT"Resave it under another name"
750PRINT"for future use if required"
760PRINT''"P.S. Make sure you've saved"
770PRINT"this program first"
780ENDPROC
```

Up, down, fire!

The mysteries of joystick operation on the 64 explained

by **Peter Graves**

Electrically a joystick consists of five independent push buttons (up, down, left, right and fire). These provide the inputs to interface circuitry within the computer which interprets the operation of the switches as changes in the contents of a memory location. In the CBM 64 these are 56321 for Port 1 and 56320 for Port 2. If either of these locations is *Peeked* while a joystick is connected the result will be an apparently unconnected series of numbers. Each switch controls a single bit in the location, changing it from 1 to 0 when the switch is operated. The eight bits of the location form a binary number made up of 0s and 1s and it is the decimal equivalent of the binary number that is displayed with a *Peek*.

The program displays the port memory location in its binary form and updates the bits as the joystick is operated. The decimal value is also printed out. Note that more than one bit can be changed at a time, up to three if the joystick happens to be in a 45° position (say, up and left) and the fire button is pressed. The joystick only operates on the lowest five bits (0 to 4) of the memory location, the upper three have been permanently set to 1 on the display.

Apart from being a demonstration of how a joystick works, the program is also useful for checking the operation of a suspect joystick.

The printing of the display is quite conventional but the way in which the memory location is read may seem a little odd. For speed, the processing that the program must do has been reduced to a minimum by eliminating variables (that must be looked up), spaces (which make the program more readable without contributing to its speed), loops (which take time) and by keeping the number of lines to a minimum. Each bit of the location is read in turn by *Peeking* the location value and logically *AND*ing it with a number (different for each bit) that masks off the effect of the other bits. This lets us ascertain if that bit is a 1 or a 0. 48 is added to generate the correct screen code (48 = 0, 48 = 1) and then it is *Poked* into the correct box of the display.

To get a down arrow and right arrow for the display, the square bracket symbols have been redefined. To do this the character set must be moved out of the Rom where it normally resides (and where it cannot be changed) into Ram starting at location 12288, then redefining the two characters by *Poke*ing new data into the appropriate locations. The transfer from Rom to Ram is rather slow (about 17 seconds) using Basic. When the program has been run for the first time it will be found that the cursor and cursor controls symbols look very odd! The information to make up these symbols is being taken from Ram which only contains random data; the program operation is unaffected. Typing *New* will not get things back to normal, turn the computer off and on again or type *Sys* 64738 followed by Return. To use Port 2 change all the 56321's for 56320; strictly the highest bit in the display (bit 7) should be changed to 0 to make the display reflect reality.

Program Notes

110-190	Set up screen display
120	Jump to routine for changing the square brackets to arrow symbols
200-220	Starting from bit 0, mask off each bit in turn in the location, ascertain if it is 0 or 1, generate the correct screen code and Poke it into the correct position in the display
230	Print the decimal value of the location and return to 200 to repeat the whole process
1010-1020	Clear the screen, set the keyboard to upper case characters and print message (setting up takes about 17 seconds)
1030-1060	Reserve memory space for transformed character set, turn off interrupts, switch in character Rom then transfer it character by character to the Ram starting at 12288, then switch out the Rom, reset the interrupts and direct the computer to take its character information from the Ram
1060-1090	Change the character information in the positions corresponding to the square bracket characters by Poking in data from the data statement.
1140	Return to the main part of the program.
160-180	The display boxes are made up from Commodore key plus A, S, Z, X, E and R and the shift key plus C and B

```
100 REM JOYSTICK REGISTER OPERATION      BY PETER GRAVES
110 POKE 646,1·POKE 53281,8 POKE53280,6
120 GOTO  1000
130 PRINT "♥":PRINT TAB(11) "▮▮JOYSTICK OPERATION▮▮"
140 PRINT TAB(7) "                 F ] ← [ ↑"
150 PRINT TAB(7) "BIT  7 6 5 4 3 2 1 0"
160 PRINT TAB(11) "┌─┬─┬─┬─┬─┬─┬─┬─┐"
170 PRINT TAB(11) "│1│1│1│ │ │ │ │ │"
180 PRINT TAB(11) "└─┴─┴─┴─┴─┴─┴─┴─┘"
190 PRINT TAB(7) "▮DECIMAL ":PRINT "▮▮▮NOW OPERATE THE JOYST
200 POKE1410,(PEEK(56321)AND1)+48:POKE1408,(PEEK(56321)AND2)
210 POKE1406,(PEEK(56321)AND4)/4+48·POKE1404,(PEEK(56321)AND
220 POKE1402,(PEEK(56321)AND16)/16+48
230 PRINT"▮▮▮▮▮▮▮▮▮▮▮▮▮"TAB(15);PEEK(56321),"= PEEK(56321)":
1000 REM
1010 PRINT CHR$(142)
1020 PRINT "▮▮▮▮▮▮▮▮▮▮▮SETTING UP - WAIT A MOMENT!"
1030 POKE52,48 POKE56,48.CLR POKE56334,PEEK(56334)AND254:POK
1040 FORI=0TO1023 POKEI+12288,PEEK(I+53248)·NEXT:POKE1,PEEK(
1050 POKE 56334,PEEK(56334)OR1·POKE 53272,(PEEK(53272)AND240
1060 FOR N=12520 TO 12527·READ A POKE N,A NEXT
1070 FOR N=12504 TO 12511.READ A POKE N,A·NEXT
1080 DATA 0,8,12,254,254,12,8,0
1090 DATA 0,24,24,24,126,60,24,0
1140 GOTO 130
```



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Words per minute

Sharpen up your typing skills with this keyboard tutor from **Mike Coombes**

This program is designed to help 'two-finger' typists to increase the speed and accuracy with which they can type

At the end of the text, the user's performance is indicated by three percentage ratings, speed, accuracy and overall score. Over a period of time, the program can help even the slowest of typists, provided that it is used fairly regularly.

Program Notes

50-100	Initialisation
110-210	Start screen
220-380	Instructions
400-1040	Main test loop
1050-1210	Print scores
1220-1260	Keyword data
1270-1330	Break pressed

```
10 REM    Computer Typing Tutor
20 REM
30 REM    by Mike Coombes (11/84)
40 REM
50 ON BREAK GOSUB 1270
60 MODE 1
70 INK 0,26:INK 1,2:INK 2,6:INK 3,9
80 PEN 1:PAPER 0:CLS
90 BORDER 26
100 PEN 2:INK 2,3
110 REM
120 REM    START SCREEN
130 REM
140 LOCATE 7,4:PRINT "COMPUTER KEYBOARD TRAINER"
150 LOCATE 7,5:PRINT "-------- -------- -------"
160 PEN 1:LOCATE 7,10:PRINT "Press [I] for instructions"
170 LOCATE 8,13:PRINT "Press [T] to start test"
180 PEN 3:LOCATE 13,10:PRINT "[I]":LOCATE 14,13:PRINT "[T]":PEN 1
190 i=INKEY(35):IF i=0 OR i=32 THEN 220
200 i=INKEY(51):IF i=0 OR i=32 THEN 410
210 GOTO 190
220 REM
230 REM    INSTRUCTIONS
240 REM
250 MODE 2
260 INK 1,0
270 SOUND 1,100,3,7
280 PRINT "KEYBOARD TRAINER"
290 PLOT 0,370:DRAW 640,0:PLOT 0,370:DRAW 640,0
300 LOCATE 1,4
310 PRINT "YOU SHOULD READ THE FOLLOWING INSTRUCTIONS CAREFULLY..."
320 LOCATE 1,7
330 PRINT "This program will test you on your speed and accuracy at typing BASIC","keywords. Over a period of time, this should help you to considerably increase","the speed at which you can enter keywords."
340 PRINT:PRINT"A keyword will be printed on the screen, and you should type this word FIVE","times, as quickly as you can. After typing the word each time, you must press","the ENTER key. When you press ENTER, if the word was typed correctly, you will"
350 PRINT"hear a single bleep. If there was a mistake in your typing, you will hear a","two-tone bleep. However, you will not be able to correct any mistakes (the DELETEkey will be inoperative). This is to enable your typing skill to be judged more"
360 PRINT "accurately."
370 PRINT:PRINT"This process will then be repeated for ten different keywords. At the end of","the test you will be given a report on the speed and accuracy of your typing."
380 LOCATE 1,22:PRINT"Press [ENTER] when you are ready to start..."
390 IF INKEY$<>CHR$(13) THEN 390
400 REM
410 REM    TEST
420 REM
430 SOUND 1,100,0,7
440 INK 1,2:MODE 1
450 PRINT "KEYBOARD TRAINER"
460 PLOT 0,370:DRAW 640,0:PLOT 0,400:DRAW 320,0
470 t=0:c$="first":nour=0:count=0
480 PEN 3:LOCATE 15,10:PRINT CHR$(214);STRING$(9,143);CHR$(215):LOCATE 16,12
490 LOCATE 15,14:PRINT CHR$(213);STRING$(9,143);CHR$(212)
500 FOR f=11 TO 13:LOCATE 15,f:PRINT CHR$(143):LOCATE 25,f:PRINT CHR$(143):NEXT f
510 PEN 1
520 DIM a(50)
530 FOR q=1 TO 10
540 WHILE INKEY$<>"":WEND
550 LOCATE 10,6:PRINT "Your ";c$;" word is..."
560 c$="next"
570 t=0
580 RESTORE 1250
590 ww=INT(RND*50)+1
600 IF a(ww)=1 THEN 590
610 a(ww)=1
620 FOR f=1 TO ww:READ w$:NEXT f
630 count=count+LEN(w$)
640 LOCATE 17,12:PRINT SPACE$(9)
650 LOCATE 17,12:PEN 2:PRINT w$
660 SOUND 1,100,2,7:FOR f=1 TO 30:NEXT
670 PEN 2
680 LOCATE 7,17:PRINT "Start when you are ready..."
690 LOCATE 7,19:PEN 2:PRINT ">":LOCATE 8,19:PEN 3:PRINT "+":PEN 1
700 LET i$=UPPER$(INKEY$):IF i$>CHR$(64) AND i$<CHR$(91) OR i$=CHR$(13)THEN 710 ELSE 700
710 PEN 1
720 FOR wrd=1 TO 5
730 type$=""
740 IF wrd=1 THEN DIM er(5)
750 LOCATE 7,18+wrd:PEN 2:PRINT "> "
760 x=1
770 LOCATE 7+x,18+wrd:PEN 3:PRINT "+"
780 LOCATE 7+x,18+wrd:PEN 1
790 IF wrd=1 AND x=1 AND i$=CHR$(13) THEN LOCATE 7,17:PRINT SPACE$(30):SOUND 1,200,2:GOTO 690
800 IF wrd=1 AND x=1 THEN 850
810 i$=UPPER$(INKEY$):t=t+1
820 IF i$>CHR$(64) AND i$<CHR$(91) THEN 850
830 IF i$=CHR$(13) THEN LOCATE 7+x,18+wrd:PRINT " ":GOTO 890
840 GOTO 810
850 PRINT i$;:SOUND 1,100,1,7
860 x=x+1:type$=type$+i$
870 IF wrd=1 AND x=2 THEN LOCATE 7,17:PRINT SPACE$(30)
880 GOTO 770
890 SOUND 2,100,10,7:IF TYPE$=w$ THEN GOTO 920
900 e=1:er(wrd)=1:SOUND 2,200,10,7
910 nour=nour+1
920 NEXT wrd
930 IF e=0 THEN 960
940 FOR f=18 TO 24:LOCATE 7,f:PRINT " ":NEXT f
950 FOR f=1 TO 5:IF er(f)=1 THEN SOUND 1,100,5,7:LOCATE 1,18+f:PEN 2:PRINT "ERROR";CHR$(243):PEN 1:FOR g=1 TO 400:NEXT g
960 NEXT f
970 FOR f=1 TO 1000:NEXT f
980 FOR f=19 TO 25:LOCATE 1,f:PRINT SPACE$(40):NEXT f
990 LOCATE 17,9:PRINT SPC(8)
1000 ERASE er
1010 NEXT q
1020 ENT 1,130,-1,1
1030 SOUND 1,200,100,15,0,1
1040 FOR f=5 TO 24:LOCATE 1,f:PRINT SPACE$(40):NEXT f
1050 REM
1060 REM    END OF TEST
1070 REM
1080 WHILE INKEY$<>"":WEND
1090 LOCATE 13,7:PEN 2:PRINT "TEST COMPLETE":PEN 1
1100 LET ar=INT(((50-nour)/50)*100)
1110 LOCATE 9,13:PRINT "ACCURACY RATING:":LOCATE 26,13:PEN 2:PRINT ar;CHR$(37):PEN 1
1120 sr=INT(((300-(t/count))/250)*100)
1130 IF sr<0 THEN sr=0
1140 IF sr>100 THEN sr=100
1150 LOCATE 9,16:PRINT "SPEED RATING:":LOCATE 26,16:PEN 2:PRINT sr;CHR$(37):PEN 1
1160 LET oc=INT((ar+sr)/2)
1170 LOCATE 9,19:PRINT "OVERALL SCORE:":LOCATE 26,19:PEN 2:PRINT oc;CHR$(37):PEN 1
1180 PEN 3:INK 3,4
1190 ERASE a
1200 LOCATE 13,25:PRINT "Press [ENTER]"
1210 IF INKEY$=CHR$(13)THEN 60 ELSE 1210
1220 REM
1230 REM    KEYWORD DATA
1240 REM
1250 DATA "AUTO","BORDER","CLEAR","CLS","CONT","DATA","DELETE","DIM","DRAW","DRAWR","EDIT","ERR","ERASE","GOSUB","GOTO","INK","INPUT","KEY","LEN","LIST","MODE","NEXT","PAPER","PEN","PLOT","PRINT","READ","RENUM","RESTORE","RETURN","RUN","SAVE","SOUND"
1260 DATA "TRON","TROFF","WHILE","WEND","PRINT"
1270 REM
1280 REM    BREAK PRESSED
1290 REM
1300 PAPER 0:INK 0,20:PEN 1:INK 1,0:BORDER 20
1310 MODE 2
1320 PRINT "** BREAK **"
1330 PRINT:PRINT "Type [RUN] to restart":PRINT
```

New Feature

Bytes & Pieces

Bytes and Pieces is a new feature specifically for the programmers and would-be programmers among us . . . and that means you! Have you got a favourite routine or programming tip? Do you want to become rich and famous? If your answer to both questions is yes, then I'm sorry . . . we can't really help you. But if you send something in and your contribution is published, we'll offer you one of a selection of Sunshine books, and you'll be in with a chance of winning a free year's sub to *Popular* (we're giving away one per month). Meanwhile, read on.

Screen Compressor on Spectrum by Robert Kirtland

It has often been publicised that screens can be stored in memory and then moved back again at a later date. This, however, is somewhat limited by the large amount of memory to store a screen. This program stores screens in memory but it compacts them in such a way that the amount of memory they take up is drastically reduced. This is done by replacing all of the zeros in the data. A typical screen can be as much as 75% zeros.

The two programs listed will poke the code into memory at any address. The address where you want the screen to be stored should be poked into the second and third byte of each piece of code. As each screen takes up a different amount of memory it is important that the end of the stored screen is known. If the store program is called using the command LET L=USR address then L will hold the end address of the stored screen.

I have also included assembler listings of the programs so that machine code addicts can see how the programs works. Listing one is the compress program and the shorter listing two is the expand program.

The following program will store the screen at address A1, the compress program being stored at address A2

```
10 POKE A2+1,A1×(INT(A1/256))*256
20 POKE A2+2,INT(A1/256)
30 LET L=USR A2
```

```
  1 REM ****************
  2 REM * COMPRESS CODE *
  3 REM * © R. Kirtland *
  4 REM ****************
 40 LET c=0
 50 INPUT "Start address of cod
e ? ",a
 60 FOR j=a TO a+78
 70 READ n
 80 POKE j,n
 90 LET c=c+n
100 NEXT j
110 IF c<>7103 THEN PRINT FLASH
1,"ERROR IN DATA"
120 STOP
200 DATA 33,240,210,17,0,58,1,0
201 DATA 27,26,254,0,40,16,118
202 DATA 35,19,11,120,177,32
203 DATA 243,58,77,175,2,3,2
204 DATA 201,197,14,1,19,237,87
205 DATA 4,81,193,11,120,177,32
206 DATA 11,175,119,35,237,75,4
207 DATA 91,113,35,24,224,197
208 DATA 237,75,4,81,80,254,0
209 DATA 32,7,12,62,255,185,32
210 DATA 216,18,175,119,35,113
211 DATA 35,193,24,166
```

[illegible]

```
  1 REM ****************
  2 REM * EXPAND  CODE *
  3 REM * © R.Kirtland *
  4 REM ****************
 40 LET c=0
 50 INPUT "Start address of cod
e ? ",a
 60 FOR j=a TO a+30
 70 READ n
 80 POKE j,n
 90 LET c=c+n
100 NEXT j
110 IF c<>2776 THEN PRINT FLASH
1,"ERROR IN DATA"
120 STOP
200 DATA 17,240,210,33,0,64,26
201 DATA 254,0,40,5,119,35,19
202 DATA 24,246,19,26,254,0,200
203 DATA 71,175,119,35,16,252
204 DATA 19,24,232
```

[illegible]

Screen Dump on BBC B by Roger Bradshaw

This program is very short and straightforward. It was written at a time when I needed a screen dump for my BBC B, so I wrote my own.

The program can either be included within another program using PROCdump, or some other procedure. Or a line can be incorporated within a program to Chain the screen dump. However, this latter method will overwrite the contents in memory. The screen dump will work with most printers. I use it on an Epson MX80 F/T.

```
10REM    SCREEN DUMP
20REM BY ROGER BRADSHAW
30REM COLCHESTER   1985
40REM PLACE IN  PROGRAM
50REM OR   CHAIN "DUMP"

60VDU2:AP%=A%:FORO%=0TO23:FORL%=0TO39:VDU31,L
%,D%:A%=135:C%=(USR(&FFF4)AND&FFFF)DIV&100:VD
U1,C%:NEXT:VDU1,13:NEXT:VDU1,13,1,13,1,13,3
```

3-D Graphics on Amstrad by P Long

This is a 14 line program that will, with very little effort, produce some of the best 3-D images that you will ever see on a home computer!

The only major drawback is time – as my maths is much better than my computing skill, it takes a few minutes for the more elaborate drawings to finish – but as the example shows, it's worth waiting for

Interesting effects can be obtained by changing Line 60. Changing it to 60 Q=(R−1)*Cos(6−R) gives you the classic 'Black Hole' diagram. And try this one: 60 Q=(R−1)*Sin(−16*R). In Line 10, XS and XY control the definition of the drawing. Put simply, a lower number gives less space between the dots. XS=1 and YS=1 gives the finest definition, but takes correspondingly longer to finish. Try XS=6 and YS=6 to give a quick idea of what any change will look like

```
10 MODE 2:ORIGIN 320,200:xs=4:ys=4
20 a=320:b=a*a:c=200
30 FOR x=a TO 0 STEP -xs:s=x*x:p=SQ
R(b-s)
40 FOR i=-p TO p STEP 6*ys
50 r=SQR(s+i*i)/a
60 q=(r-1)*SIN(16-r)
70 y=i/3+q*c
80 IF i=-p THEN m=y:GOTO 110
90 IF y>m THEN m=y:GOTO 120
100 IF y>=n THEN GOTO 130
110 n=y
120 PLOT -x,y:PLOT x,y
130 NEXT:NEXT
140 END
```

De-fuse on Commodore 64 by Matthew Aubry

This program was written as an experiment into useful applications for computers. As it stands, this program serves no real use whatsoever, as it is only a demonstration. It runs on a Commodore 64, plus Basic Lightning. I find Basic Lightning very useful, as it has many features, several of which are demonstrated in this program.

When run, this program will ask for a number of points. A sensible figure might be 30, but it will accept most numbers.

After a pause it will show a 'map' with the number of points joined up, in a randomly generated order. After another pause, it will begin to join these points up in a sensible, short route. It does this by calculating the nearest point, then the point nearest to that, etc

The program could be developed into a more sophisticated route finder, but this would make the program considerably longer. For those who do not posses Basic Lightning, the program could be converted to another 'basic extension'.

```
1 INPUT"How many points";y
2 RESET HBORDERGREEN TPAPERRED INK BLACK
5 SETATR0 BLACK,GREEN SCLR0,ATR
6 WINDOW20
7 SPRITE1,40,20
10 DIMa(y,2)
20 FORt=1TOy a(t,1)=INT(RND(1)*300)+10 a(t,2)=INT(RND(1)*140)+10
21 NEXT
22 IFy>19THEN30
25 FORt=1TOy STRPLOT1,INT((a(t,1)/8))-1,INT((a(t,2)/8)-.5),STR$(t),0 NEXT
30 FORt=1TOy-1 DRAW1,a(t,1),a(t,2),a(t+1,1),a(t+1,2)!NEXT
31 FORq=1TOy-1
32 l=l+(ABS(a(q,1)-a(q+1,1))+ABS(a(q,2)-a(q+1,2)))
33 NEXT
34 PUTBLK1,0,0 FORt=1TO2000!NEXT SCLR0,ATR IFy>19THEN36
35 FORt=1TOy STRPLOT0,INT((a(t,1)/8))-1,INT((a(t,2)/8)-.5),STR$(t),0 NEXT
36 t=1 o=0
40 a=a(t,1):b=a(t,2)
45 a(t,1)=1000 a(t,2)=1000
46 d=1000
47 p=0
50 FORq=1TOy
60 g=ABS(a(q,1)-a)+ABS(a(q,2)-b) IFg<dTHENd=g p=q
70 NEXT
71 o=o+d
75 IFp=0THENo=o-d GOTO85
80 DRAW0,a,b,a(p,1),a(p,2) t=p GOTO40
85 PRINT"Number of Points ";y
86 PRINT"          After","Before"," Diff"
90 PRINT"Distance",o,l,l-o
100 BLKXBLK0,0,0,40,20,1,0,0
110 GETa$ IFa$=" "THEN100
120 IFa$=""THEN110
130 RUN
```

Text Routine on Spectrum by D Mainprize

This short program allows the user to place text in any one of five heights anywhere on the screen, and, although slow, could be quite useful for producing a Screen$

It works by changing the contents of the Spectrum's display file and Poking the enlarged characters to screen.

To make it really useful, I suggest compiling it into machine language, placing it above Ramtop in a program, changing the text-positioning variables, and calling upon the routine from Basic.

```
9000 INPUT "X co-ordinate? ",inx:
 INPUT "Y co-ordinate",inp: INPU
T "LETTERING SIZE? (1-5)";si: IF
 si<1 OR si>5 THEN GO TO 130
9010 INPUT k$: FOR o=1 TO LEN k$
: LET x=inx+(o-1): LET y=inp: LE
T l$=k$(o)
9020 LET cs=15360: LET c=CODE l$
: LET cp=cs+(c*8): LET y1=INT (y
/8): LET f=y1*8: LET y1=y1*2048
: LET co=0: FOR s=1 TO si: FOR n=
0 TO 7
9030 LET pos=16384+((y-f)*32)+y1
+x+(n*256)
9040 IF co=si THEN LET cp=cp+1:
LET co=0
9050 LET co=co+1: POKE pos,PEEK
cp: NEXT n
9060 LET y=y+1: NEXT s: NEXT o:
PAUSE 0: GO TO 1: REM
```



Memory increase

Without doubt the most interesting release I have received in my mailbag for a long time is the first of the Mikro-plus games for the Spectrum. For an absolutely amazing £14 95, you get a game tape and a cartridge that plugs into the expansion port of the Spectrum, which takes the effective memory for the game up to 64K, plus a joystick socket (that unfortunately only works on this game)

Despite appearances there's nothing really outstanding in the technology of this, what is exciting is that Rom chips are getting so cheap that companies can afford to use them and still sell the games at such remarkable prices The other Rom chip game that will be in the shops soon is, of course, the BBC version of *Doctor Who* from Micropower, which again couldn't fit into the 32K memory otherwise

The funny thing about the Spectrum is that Sinclair's own attempt to spur on Rom cartridge software with his Interface was such a damp squib. One or two early Ultimate releases were the only games that made it on to that format. The American arcade game giants, Parker Brothers were reported to be working on some stunning cartridge games that would perhaps have revolutionised the whole thing, but they dropped the project and pulled out of the British home market altogether

Of course the other means of increasing the memory size of a game is to use a fast storage media, in the Spectrum's case the microdrives Again, when these were released everyone predicted mega-games that would take full advantage of the format Needless to say, we're still waiting. Of course microdrives are useful for backups of tape games, but so far there is no incentive to stick with Sinclair's standard rather than one of the opposition wafa or disc drives, many of which offer extra features

It's obvious that from Mikro-gen's point of view it pays to provide a complete plug-in system that opens up the whole Spectrum market, rather than limit yourself to those people who can afford one or the other of the interfaces I think the only way that Sinclair could guarantee the future of these add-ons would be to commission some really breathtaking programs, ones that make people desperate to have them.

Anyway, what of the game itself? *Shadow of the Unicorn* looks like a cross between *Valhalla* and *Lords of Midnight*; in play it strikes me as rather like an expanded *Everyone's a Wally*, given a pseudo-serious Tolkeinesque background you walk around, explore, find objects, find uses for them, fight monsters, etc in a sense it is a true arcade animated adventure The playing area is large, but not really a patch on the Doomdark series, so we will have to credit Mikro-gen with the thought that the memory has been used on the plot.

This contention is supported by the huge accompanying novella that you are supposed to read to set the scene, find clues, etc Just the sort of thing guaranteed to send shivers of fear up a reviewer's back Graphically, it's only average, black characters on a coloured background, which somehow still manages to produce attribute clashes

All this is a bit disappointing for the first of the mega-games and one of the other releases may have made more impact as a first release Look out for the obligatory Wally mega-game, and *Battle of the Planets*, a TV spin-off using some very slick and fast 3D line graphics

Manic Miner on the Amstrad

Now let's get on with some pokes, this week for the Amstrad. One of the big problems we have with this machine is that people send in pokes that are easy to enter if you have a means to deprotect the Basic loader to type it in. If you haven't, then the alternative is to write a new Basic loader that entirely replaces the existing one I was pleased to receive a letter from Neil Chisholm of Glasgow who has taken a couple of pokes and built them into full routines

Incidentally, I have heard that new versions of Amstrad *Manic Miner* have a hyperload protection loader, and I'm afraid that these pokes won't work as written on those tapes

Manic Miner Replace first block with this new Basic Header

```
10 Memory &4500
20 CLS
30 LOAD "!"
40 Poke &6FA9,0 (Infinite lives)
50 Poke &713E,0 (Fall From any Height)
60 Poke &7401, 24 (Switch screens by pressing 'ESC')
70 Call &6E5C
```

3D Starstrike

```
10 Memory 8119
20 Mode 0
30 Load "SETUP.BIN"
40 For I = 0 TO 15
Read Col: Ink I, Col. Next
50 Border 0: Paper 0
60 Data 0,2,8,8,18 20,24,26,26,26,
   26,26,26,26,26,15
70 Call 36506
80 Load "!CODE.BIN"
90 Poke &2866,0 (Keeps you on level 1)
100 Poke &2640,0. Poke &2641,0 (Puts shields to maximum after every run)
110 Call 10140
```

Now for a new poke from Keith Gillen of Leeds, *Killer Gorilla* Poke 20760,0 (lives) Poke 18312,0 (bonus)
Keith hasn't provided a full routine, but it's a game I own so I've prepared one.

```
10 Mode 1
20 Memory &81FF
25 Window 8,33,18,20
26 Ink 0,0: Border 0:Ink 2,:Ink 3,26
27 Print"Killer Gorilla is loading":Print:Print"Please wait.   "
30 Load"!screen"
40 Call &8200
50 Memory &4000
60 Load "!game",&4100
70 'Insert pokes here
80 Call 4100
```


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Patched through

The latest addition to *The Quill* suite of programs is *The Patch* and the very first *Patch*'d adventure is *Microman* from Compass Software of Norwich. Many moons ago, I saw their programs *Project X The Micro Man* – then, I thought that it looked OK-ish, but nothing very exciting, but Compass are persevering with the story, so we must too, I guess!

A very colourful title screen, full, I'm sure, of subtle clues, but certainly a lot of flashing text, acknowledgements to Gilsoft and Melbourne House (for use of their *Draw* utility for the title-screen itself) and of course *The Patch*. It's good to see all these taken care of right at the start – many programs never seem to get round to it: and indeed, *The Quill* even makes an appearance as an object in the game itself.

After this, we get a screen of instructions – yet more acknowledgements – all done in a particularly legible typeface. But. . . what's this? "Pic on/off. Save to memory"? Ah, of course, *The Patch*. At the foot of this first page, there is also the dire warning: "No Swearing", as if we would think of that! But what happens if you do, and it's a natural reaction after all, is very unfair and rather childish, I thought – nothing less than a total reset of the computer, and the necessary reloading.

The plot concerns a scientist (you!) who has managed to change the laws of nature and shrinks to minuscule proportions at the drop of a hat or at least gamma rays and charges around the countryside striking terror into the hearts of field-mice, glow-worms . .

Anyway, here you are, trying to get into your colleague's guarded lab, conveniently situated in his house and inconveniently guarded by COM 2, "a high-tech computer". This super-Spectrum has nothing to do in life, but prevent you from gaining access to the lab in order to get back to your normal size, and it is this that poses that main puzzle of the adventure.

The puzzles in *Microman* are OK, and a good deal of logic is required. A lot of use is made of the main theme – your minuscule physique: thus, a thimble comes in handy as a diving helmet, a pin as a spear and so on. *The Patch* has been used well here, with several of the in-built sound effects making an appearance along with the save-to-buffer facility, which is always a great help.

The authors have included a novel weight limit – rather than just being told that you cannot carry any more, the program allows you to carry heavy weights, only to land you in real trouble if you try to walk with this heavy weight across a haystack, for example.

All in all, *Microman*, despite displaying many of the same spelling and grammar mistakes that dogged the first version of the program, is a worthy attempt at an unusual adventure. At just £2.99, it's great value. Compass Software, 63 Coxens Road, Norwich NR1 1JP.

From further north, Blackpool to be precise, comes another unusual *Quill*'d adventure for the Spectrum now, and later on for the Commodore 64 and Electron. *Murderhunt* is from Bodkin Software, the plot concerning a homicidal prisoner who has escaped – you play the part of Father Paddy Murphy, Vicar of Saint Ivan the Terrible.

Authors C Davies and M Hale have designed a rather unusual character set, rune-like but legible and attractive nevertheless – and wonder of wonders, no spelling mistakes as far as I could see.

Murderhunt is very enjoyable and stylish. The problems are not too difficult, but for the most part very logical – for example, you'll find a shovel in the sexton's hut, which should give you the urge to go digging in the graveyard!

I'm always pleased when I see authors taking trouble over a game (would you part with your money for a slapdash effort?), and Bodkin certainly seem to have done that. Even the final screen, before the computer News itself, has a little advert for future games from the company. Highly recommended, particularly at the all-in price of just £2.50. Bodkin Software, 16 Carr Lane, Hambleton, Nr. Blackpool, Lancashire.

Gilsoft's earlier utility, *The Illustrator*

I've also recently enjoyed playing *Manor Of Madness*, from Celtic Software. There are a lot of fairly obvious, classic problems as well as a lot of adventuring in-jokes. You've seen them before, and you'll see them again, but they are enjoyable for all that.

There are 69 locations (all but 1 byte of memory has been used!), plenty of juicy objects to be manipulated and although the adventure is pre-*Illustrator* and pre-*Patch*, the atmosphere is strong and the humour for once not childish or rib-nudging. Celtic Software, 77 Willow Park Avenue, Glasnevin North, Dublin 11, Ireland.

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HH Tiger Wanted Programming manual or any technical information about the HH Tiger I would be glad to receive any news about a user group or owner who could help Phone (0561) 82798

ADVENTURE HELPLINE

Spiderman on C64. How do I get extra weight to start the process? I have 775 pounds weight J H Dyson Bryn Tinon Vaynol Park Bangor, Gwynedd, Wales.

Twin Kingdom Valley on BBC What use is the wooden rod? P Cates 8 Mountview Road, Hornsey London N4

Sherlock on Spectrum. What next after proving the major innocent and decoding letters? Banana Banana Andrew Vines Mulliohn' Essen Lane Kilsby Rugby Warwickshire CV23 8XQ

Fourth Protocol on Spectrum. What words will medical security understand when I try to do something about Them? Jenny Tyack 48 St Rualds Close Wallingford Oxon.

Starship Axis on Spectrum. How do you open the blue door Lin Burns 38 Park Street Weymouth, Dorset

Hobbit on Spectrum Any tips on anything Andrew Rea 116A Kingsmead Avenue Worcester Park, Surrey

Return to Eden on Amstrad. How do you stop snowball from turning its engines on you Stuart Slater 108 Clanway Street, Tunstall Stoke-on-Trent Staffs

Magic Mountain on Spectrum I asked for the Scroll as my one wish from the genie in the bottle but he didn't grant my wish and disappeared in a puff of smoke! What can I wish for he will grant? A R McDowall, 7 Third Avenue Wellingborough Northants

Valhalla on Spectrum I cannot find Skalir the fourth quest object Andrew Morris, 48 Park Road Silverdale Newcastle Staffs

Eureka! on Spectrum. How do you cure leprosy in Roman times? Gill Crankshaw 180 Hollin Lane Middleton Manchester

Forest at World's End on Amstrad. How do I get on the boat? What's the silver coin for? Where do I use the rope? Roger Wilson, 7 Gawthorpe of Dukes Row Blackburn, Lancs BB2 6DL

Amazon on Commodore 64. How do you cross the second bridge? Wayne Johnston, 4 Highworth Road New Southgate London N11

Hobbit on Spectrum. How do you cross the black river to Mirkwood? Richard Young, 79 Maston Road Abbeywood London SE2.

Heroes of Karn on Amstrad. How do I get the frog and the money? **Jewels of Babylon on Amstrad.** Where is the key and the raft? Roger Wilson, 7 Gawthorpe of Dukes Row Blackburn Lancs BB2 6DL

Eureka! on Spectrum. Modern Caribbean How do you enter the inca pyramid and/or the plane? Lance Mitchell HQ Engr 4 Armd Div HQ BFPO 15

Pimania on Dragon. I can't see the hangglider the hulahoop the pogo stick, Psalm 32 and the saxophone Can anyone help? Hazel Acton 36 Fraser Road, Great Sankey Warrington Cheshire

Fourth Protocol on Commodore 64. What are the phone numbers of Blenheim and Stockwyn? **Sherlock on Commodore 64.** How do I arrest Foulkes? Karl Thoroddsen, Steinum Alftanesi Bessastadahreppi Karnanyala Iceland.

Castle of Terror on Commodore 64. I cannot complete any of the first part. Any help appreciated George Gray 78 Wicked Hern Road, Armthorpe, Doncaster

Twin Kingdom Valley on Spectrum. How do I get the master key from the dragon in the North tower? Peter Martin 16 Mark Karaolis Street Strovolos Nicosia, Cyprus

Mission 1 project Volcano on Amstrad. Please help! How do I get past the lift droid? Kyle Taylor, 42 Pearsmur Road Aberdeen Scotland.

Time Traveller on Commodore 64 How do I open the tool cupboard and enter the teleporter? Paul Andrews 107 Kingsmead Avenue Worcester Park Surrey

Fourth Protocol on Spectrum How can I tap Faulkner's phone calls? Jenny Tyack 42 St Ruald's Close Wallingford Oxon.

Heroes of Karn on Amstrad. How do I fill the bottles and how do I open the clam? I can help anyone with Forest at World's End. Leif Lie Niels Juels Gt 83 4000 Stavanger Norway

Gremlins, Sherlock, Knotilla, Snowball and Lords of Time on Spectrum. Any help gratefully received I can help in return on Hulk, Spiderman Hobbit Circus and Perseus and Andromeda. Mark Towner 48 Park Lane Knypersley Stoke-on-Trent Staffs

Snowball on Amstrad. How do I open the smooth doors? What use is the floating table? Where is the wardrobe? What use is the revival ear chase? Christopher Norton 36 Deakin Road, Erdington Birmingham B24 9AN

Spiderman on Commodore 64. How do you get the gem off the sandman? What are the HCl and CaCO3 for? How do you get further up the shaft? Phil Jones, 33 Churchfield Road, Rothwell Leeds LS26 0B3

Forecastle 481 on Commodore 64. Where do I get the permit to carry the library? Frank Hersen, Karel de Ujjdestraat 13 Den Bosch Holland

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Bubbling Under

Astro Clone/**Spectrum (Beeston Consultants)**, Strike Force Harrier/**Spectrum/BBC/Electron** (Mirrorsoft); Imhotep/**C64 (Ultimate)**, BC Quest For Tires/**Spectrum/C64 (Software Projects)**; Battle of Britain/**Spectrum/C64/Amstrad** (PSS).

All figures compiled by Gallup/Microscope

Top Twenty

1	(–)	Winter Games *(C64)*	**Epyx/US Gold**
2	(1)	Monty on the Run *(Spectrum/C64)*	**Gremlin Graphics**
3	(11)	Fighting Warrior *(Spectrum/C64/Amstrad)*	**Melbourne House**
4	(2)	Way of the Exploding Fist *(Spectrum/C64/Amstrad)*	**Melbourne House**
5	(6)	Finders Keepers *(Spectrum/C64/Amstrad/MSX)*	**Mastertronic**
6	(4)	Impossible Mission *(Spectrum/C64)*	**Epyx/US Gold**
7	(3)	Frank Bruno's Boxing *(Spectrum/C64/Amstad)*	**Elite**
8	(5)	Formula One Simulator *(Spectrum/C64/C16)*	**Mastertronic**
9	(–)	Ten Computer Hits *(Spectrum/C64/BBC/Electron)*	**Beau Jolly**
10	(8)	Action Biker *(Spectrum/C64)*	**Mastertronic**
11	(12)	BMX Racers *(Spectrum/C64/C16)*	**Mastertronic**
12	(10)	Hacker *(Spectrum/C64/Amstrad/Atari)*	**Activision**
13	(7)	Daley Thompson's Supertest *(Spectrum)*	**Ocean**
14	(9)	Starquake *(Spectrum)*	**Bubble Bus**
15	(–)	Match Day *(Spectrum/C64/Amstrad/BBC)*	**Ocean**
16	(15)	Fairlight *(Spectrum)*	**The Edge**
17	(17)	Beach-Head *(Spectrum/C64/Amstrad/BBC Electron/Atari)*	**Access/US Gold**
18	(–)	World Series Basketball *(Spectrum/Amstrad)*	**Imagine**
19	(19)	Nonterraqueous *(Spectrum/Amstrad)*	**Mastertronic**
20	(14)	Graham Gooch's Test Cricket *(Spectrum/C64)*	**Audiogenic**

Figures compiled by Gallup/Microscope

Readers' Chart No 50

1	(1)	Way of the Exploding Fist *(Spectrum/C64/Amstrad)*	**Melbourne House**
2	(2)	Fairlight *(Spectrum)*	**The Edge**
3	(2)	Bored of the Rings *(Spectrum/C64/BBC)*	**Silversoft**
4	(6)	Now! Games *(Spectrum/C64)*	**Virgin**
5=	(4)	Hypersports *(Spectrum/C64)*	**Imagine**
=	(7)	Red Moon *(Spectrum/C64/Amstrad/BBC/Electron)*	**Level 9**
7	(3)	Daley Thompson's Supertest *(Spectrum)*	**Ocean**
=	(8)	Frank Bruno's Boxing *(Spectrum/C64/Amstrad)*	**Elite**
9	(10)	Flight Simulator II *(C64)*	**Sub-Logic**
10	(5)	Spy Vs Spy *(Spectrum/C64)*	**Beyond**

Winning Phrase No 50: "Data gone – lots of swearing" from Dave Edwards of Higher Blackley, Manchester. Honourable mentions to Neil Talbott of Bromsgrove with "Sam Fox gained Tory seat" and Colin Broad of Oldham with (the rather sombre) "Isolation feeds hate"

Now voting on week 52 – £25 to win

Each week *Popular* is compiling its own special software top ten chart – compiled by YOU.

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever – but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's Readers' Chart, published above.

You can still vote in the chart without making up a slogan – but you won't be in with a chance of winning the prize.

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to: Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP

Voting for Week 52 closes at 2pm on Wednesday November 20 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name ....

Address ....

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My top 3: Voting Week 52

1. ....
2. ....
3. ....

My phrase is: ....



A severe attack of Chivalry
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Ye Olde 48K Spectrume £9.95

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New Release

CAPTIVATE

If you liked *Finders Keepers* you should start trembling with manic anticipation at the thought that its follow up *Spellbound* is now available.

Spellbound is part of the first batch of releases in Mastertronic's new MAD range.

The game is one of the best examples of that infamous breed the arcade/adventure I've seen, with big smoothly animated graphics, colourful screens and a devious plot involving much solving of puzzles – finding objects, figuring out what goes where and the like?

The game really scores in presentation, the dichotomy between wanting the simplicity of joystick or limited keypress commands, but needing to give quite a wide and complex range of instructions has often resulted in messy largely incomprehensible compromises, but David Jones has used a series of pop down menus which overlay each other where necessary to make it clear just what the current options are. It's both flexible and easy to use.

I found it captivating, the graphics have plenty of character and the pace of problem difficulty I found just right. Hardly necessary to mention the plot, is it?

Well, since you insist, it's a rescue the wizard Gimbal from the castle of Karn solving problem upon problem as you go type of affair – you being Magic Knight (as in *Finders Keepers*), lots of things to collect and plenty of mystic scrolls.

At £2 99 *Spellbound* is excellent value and should be keeping Tony Kendle and Tony Bridge in letters for months

Program *Spellbound*
Price *£2 99*
Micro *Spectrum*
Supplier *Mastertronic*
Paul St
London
EC1

REASONABLE

Robot Messiah is the first release from a new software company Alphabatim. It has been written by Christian Urquhart and Mike Smith, both experienced programmers who have credits with *Hunchback* and *Decathlon*.

It's rather like *Nodes of Yesod* which was itself like a good few Ultimate games, so it doesn't score very highly on originality. It's big though with 152 different screens, and a host of different objects.

You are SID the Robot and the idea is to collect three envelopes and take them to a master computer. This will save the world or at least the race and will turn you from a humble droid into the Robot Messiah of the title.

Though much of the game is set in that nether world of caverns that features so frequently in arcade games, there are some slightly unusual elements. At one point SID has to find and use a buggy hidden in the cave depths, elsewhere the Test Centre contains other objects vital to the mission but you need certain objects first before you can enter.

Most of the 'puzzles' work like that - it's a matter of finding the right objects and using them in the right way. Certainly the game should keep you busy for a long while. Graphically it's OK the central figure SID is a largish sprite nicely animated so that the jump motion looks particularly effective though equally some of the baddies have a wearily familiar look.

I'd say this is a reasonable effort and might be ideal for slightly younger players. £7.95 is a little too much though. Worth a look if you are an addict of this sort of arcade adventure.

Program *Robot Messiah*
Price *£7 95*
Micro *Spectrum*
Supplier *Alphabatim*
7 Sandringham
Close
East Grinstead
RH19 4RW

The Rogue Program

The Rogue Program

THIRD AND MOUSE/AMX

IN BOTH THE KNOWN AND UNKNOWN UNIVERSE THERE ARE MANY RACES, MANY LIFE-FORMS

EACH WITH THEIR OWN STORY TO TELL; SOME STRANGER THAN OTHERS,

HERE IS JUST ONE OF THESE STORIES. A STORY FAR STRANGER THAN MOST

CRACKLE

BLAST ...

What in the World ?#!

His program had crashed but?

IDENTIFY YOUR SELF

?

tip-T-Tipity-tip

Created entirely using a BBC micro with AMX mouse

Continued next week

SYMPTOMS

Your Health is, or claims to be, an expert medical system to run on your Spectrum (or Amstrad) This is odd enough, but odder still is the fact that it comes from Hisoft, creators of high quality machine code programming tools to the computer gentry

It is not, of course, anything like a full expert system. What it is more than anything is a guide to a healthy diet The subject is divided up into various sections selected from a central menu. You can under go a simple question and answer session on any symptoms you might have – however, the section of the program is only concerned with symptons related to lack of essential diet ingredients, so it's of limited use

More impressive is an option to have your weekly diet checked You are presented with a series of lists of food and must check off each one that features in your diet and indicate the quantity consumed The computer then analyses the results in terms of calories, proteins, vitamins, minerals, sugars, fibre, fat and other elements and comes to a conclusion about how good a diet you have. It works quite impressively and might be genuinely useful – but would you want to run it twice?

I think this is a reasonable program albeit with a somewhat misleading title (which matters more in 'serious' programs than it might elsewhere) but I m not sure that anyone would be well advised to buy it – how often would you use it?

Program *Your Health*
Price *£7 95*
Micro *Amstrad/Spectrum*
Supplier *Hisoft*
180 High St North
Dunstable
LU6 1AT

YOUR HEALTH
from HISOFT
A Medical Expert System for the Sinclair Spectrum 48K

Pick of the week

CENTRIFUGAL FORCE

Whilst many of us hold our breath and turn blue waiting for the first full detail version of *Marble Madness*, a very acceptable stopgap has occurred in the form of *Gyroscope* from Melbourne House

The game looks exactly like MM with those 3D geometric landscapes full of bumps and dips, sudden falls and gaping chasms Moving all this detailed background around was obviously beyond a home micro so instead it scrolls up after the end of each screen section. Instead of marbles there is a gyroscope

This moves in a complex way, spinning all the time, it recoils from anything it touches at speed and once accelerated is difficult to stop The mixture of forces including centrifugal force and inertia coupled with an uneven landscape make the gyroscope extremely difficult to control. That with an ever more fiendish layout of paths tiny ridges and sudden drops make this game incredibly difficult

The sound effects on this game are, socking my neck out, the best I have ever heard from the Spectrum, aside from thoroughly convincing noises when the gyroscope hits another object (a sort of burbling shriek) or runs out at time

The game is divided into distinct section - points that have reached within a time limit before the next section continues - later screens have nasty gyroscopes that hunt you out and areas which affect your spinning motion in a variety of ways, like magnets and slippery glass Horribly addictive and technically very clever

Program *Gyroscope*
Price *£7 95*
Micro *Spectrum*
Supplies *Spectrum*
Melbourne House
Castle Yard House
Castle Yard
Richmond
Surrey

MILITARY

It seems as if the Falklands Crisis happened a great deal longer ago than the three years it actually is.

Since then of course, a great deal has been said and written about the brief, bloody war - documentaries have been made, glossy blow by blow accounts have been published - and at least one simulation for military buffs

Now we have the computer game Or do we?

In *Assault on Port Stanley* you must (according to the cassette label), 'break through the enemy blockade and pick up combat troops sent in to run sabotage missions behind enemy lines' Hardly an out-and-out assault — and try though I might, did I catch one glimpse of Port Stanley?

In fact what you have here is a three-phase shoot 'um up (drawing on *Beach-head*, *Galaxians* and *River Raid* for inspiration) which, if a little more attention had been paid to the programming and less on the hype ('relive the triumph of our brave forces' etc), might have been a good game

If you're buying it just for the name or are expecting a military simulation of some kind, I would advise against the purchase Likewise if you are expecting a 'state-of-the-

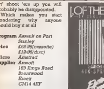
This Week

Program	Type	Micro	Price	Supplier
Seas of Blood	Adv	Amstrad	£9 95	Adventure Int
Terrormolinos	Adv	Amstrad	£7.95	Melbourne House
Fighting Warrior	Arc	Amstrad	£8.95	Melbourne House
Glen Hoddle Soccer	Arc	Amstrad	£8 95	Amsoft
Gyroscope	Arc	Amstrad	£8.95	Melbourne House
Matchpoint	Arc	Amstrad	£7 95	Psion
World Cup Soccer	Arc	Amstrad	£5 95	Macmillan
Desert Rats	St	Amstrad	£9 95	CCS
Home Bank Account	Ut	Amstrad	£7 00	D G Shedden
Home Bank Account	Ut	Amstrad (Disc)	£12 00	D G Shedden
X-Basic	Ut	Amstrad	£10 00	Siren Software
X-Basic	Ut	Amstrad (Disc)	£14 95	Siren Software
Elektraglide	Arc	Atari	£8.95	English Softwar
Elektraglide	Arc	Atari (Disc)	£12 95	English Softwar
Zkul – West	Adv	Atari ST	£24 95	Talent
Caveman Capers	Arc	BBC B	£7 95	Audiogenic
Contraption	Arc	BBC B	£9 95	Audiogenic
Gyroscope	Arc	BBC B	£8 95	Melbourne House
Repton 2	Arc	BBC B	£9 95	Melbourne House
Monopoly	St	BBC B	£12.95	Leisure Genius
Monopoly	St	BBC B (Disc)	£14 95	Leisure Genius
Red Arrows	St	BBC B	£8.95	Database Pubs
Red Arrows	St	BBC B (Disc)	£11 95	Database Pubs
Seas of Blood	Adv	Commodore 64	£9 95	Adventure Int

art' shoot 'em up you will probably be disappointed.

Which makes you start wondering why anyone should buy it at all

Program *Assault on Port Stanley*
Price *££8 95(cassette) £12·95(disc)*
Micro *Amstrad*
Supplier *Amsoft*
169 Kings Road
Brentwood
Essex
CM14 4EF



MIND-BENDING

Sandy White was much acclaimed for his Quicksilva titles *Ant Attack* and *Zombie, Zombie*. since then he seems to have been a bit quiet Now, however, we have *I, of the Mask*, released from Electric Dreams.

The first thing that hits you when you load the game up is the earth-shattering 3-D display and the mind bending perspective scroling This is possibly some of the most obviously impressive graphics programming I've seen on the Spectrum. However, as you start playing it, things become very confused.

What you get is a massive maze of corridors, interrupted at various point by what looks like roundabouts Electic Dreams calls *them* universes On entering these, you shoot one of three crystals, either to reveal a bit of robot, or transport you to another area of the maze meanwhile you are running out of power and have limited amounts of ammunition. You win by collecting all 17 bits of the robot in correct order

Avid mappers and strategists may well enjoy this one, but I found looking at the graphics more fun. As the man in the funny raincoat said, "Very clever Sandy . now give us a game " Only time will prove him right or wrong

Program *I of the Mask*
Price *£9 99*
Micro *Spectrum*
Supplier *Electric Dreams*
31 Carlton Cres
Southampton

BRILLIANT

The Little Computer People program from Activision is one of the most technically brilliant and original programs ever devised It doesn't fall into any existing game category, indeed it isn't a game at all. One simple but highly misleading way of describing it is as the computer program equivalent of the Cabbage Patch Doll.

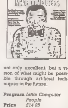
The idea is that inside your computer lives a real little person. Activision give you the means to see and hear him by the creation of a complete house with TV bed, piano, record player, kitchen, computer, pantry, bathroom etc You can (must) feed the little man, give him presents, ask him to type you a letter or hear him speak (in a weird little voice a little like C3PO)

The point about the program though is that the whole joke/fantasy has been carried off with astounding success The little man (each one on each disc has a different name - ours was called Ozzie and looks slightly different) is superbly animated, he smiles and frowns, walks around, does exercises, plays the piano, plays records, feeds the dog, types, opens and closes drawers and doors Each action is beautifully animated and the sound effects simply astonishing

You can interact with the little man in several ways You can type simple instructions to him on the computer keyboard, ask him for example to play a record, feed the dog, play the piano or type you a message You can leave him presents outside his front door like books or records

The crux of all this is the illusion that the little man is real If you are able to suspend disbelief and think of him as real the program is entertaining in a way that few other programs could be If not the lack of any sort of 'game' as such will make you very irritated Certainly young children will be instantly captivated

What about the rest of us? Well, the office was divided over those who thought it technically brilliant but rather irritating and boring and those who were hooked Being nasty adults the first thing we tried to do to the little man was kill him by starving him of water and food. If you starve him he turns green starts to move slowly and types you plaintive messages, asking gently why you aren t feeding him He stops doing anything and spends most of the time in bed I cracked pretty quickly as did most people, though a couple of hard cases wanted to see it through to the bitter and and watch him expire On balance we believed. On balance, I think the program is



not only excellent but a vision of what might be possible through artifical techniques in the future.

Program *Little Computer People*
Price *£14 95*
Micro *Commodore 64*
Supplier *Activision*
15 Harley House
London NW1

This Week

Fighting Warrior	Arc	Commodore 64	£9 95	Melbourne House
Gryrescope	Arc	Commodore 64	£9.95	Melbourne House
Screenplay	Ed	Commodore 64	£8 95	Melbourne House
Seas of Blood	Adv	Spectrum	£9 95	Adventure Int
Gryrescope	Arc	Spectrum	£8 95	Melbourne House
Desert Rats	Ed	Spectrum	£9 95	Case Computer Simulations
Football Quick Quiz	Ed	Spectrum 48K	£8.95	Cassell

Key Ad – adventure S – strategy simulation
Arc – arcade Ut – Utility Ed – education

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Mass market

The number of new computers being announced, and then released, has declined drastically at the cheaper end of the market

Even those computers which have been announced seem to be little more than extensions to existing machines

Most of the cheaper computers are still those which use 8-bit processors (with one or two exceptions) and the only cheaper computer which uses a totally 16-bit processor is the Atari 520ST (the QL is a halfway house)

Technology for cheaper computers seems to have effectively stood still for quite a time For example, the Apple II is an old machine which still has as much or more to offer as many later computers

Ignoring the Atari 520ST, recently announced cheaper computers are boring in conception, though possibly full of features, and in many senses they are effectively cheaper versions of more expensive machines of an older vintage If you want a competently packaged traditional machine (and many obviously still do) then there is no problem The question then becomes what will the user of a cheaper computer do in one, two, or three years' time?

When micros first became popular one machine was able to cater for many disparate interests, due mainly to the lack of sophistication on the part of the user (who did not usually know what to expect)

Lack of sophistication does not last for long. I have noted on many occasions that naive users do ent remain naive for long (unless they are completely lacking in any imagination) Experienced users begin to develop specialised interests – music, graphics, programming, home accounts

As each interest is pursued fo a greater depth, then the cheap general purpose computer becomes less useful. The mass market for microcomputers is diminishing rapidly. If by mass market we mean a market for general purpose computers though there are machines which are still selling well, these computers are using up the last vestige of the general interest market

If a person becomes bitten by electronic music on his or her computer, when s/he buys a new machine the graphics will be less important than for a person who is interested in CAD/CAM Both types of user will also want a general purpose computer in addition to the specialist applications

If people are not sufficiently motivated to buy a specialist form of computer, then they will stick with a general purpose machine Thus the only reason for those people to buy a new computer will be the death of the old machine, and the market for new machines to replace dead computers will not be vast.

A result of the combination of the factors of a smaller market and greater development costs mean that computers will cease to be such good value in the old sense

That this is already so is indicated by the Amigr, which from all reports is a marvellous machine able to satisfy many of the demands of the musician, as well as the graphics professional, plus many other interests. The Amiga is not a cheap machine, bet most people who have seen the machine want one

The machine is, in a sense, a taste of the future It is a more expensive computer which cannot hope to reach the market (that no longer exists) The Amiga will satisfy distinct sections of a market which might include the home but will certainly include many sophisticated (and more affluent) users

Boris Allan

Fenced in

Puzzle No 183

Farmer Watkins ambled into market to buy some fencing

'One hundred and twenty yards', remarked the salesman, 'So you're fencing off that odd-shaped piece of land at last?' Farmer Watkins, being a man of few words, nodded.

'I suppose the field has sides of 30, 40, and 50 yards', queried the salesman 'Nope', replied Farmer Watkins The salesman scribbled madly on a piece of paper before asking 'Then it must have sides of 20 48 and 52 yards

Again the answer came in the negative at which point the salesman gave up If Farmer Watkins' piece of land was a right-angled triangle, with sides an exact number of yards in length, can you determine its dimensions?

Solution to Puzzle No 178

The figure of one million 'segment seconds' will be reached at 08 22 and 53 seconds At this time the actual total will be one million and nineteen

```
10 DIM D(10)
20 DATA 6,2,5,5,4,5,6,3,7,6
30 FOR N=1 TO 10
40 READ D(N)
50 NEXT N
60 H=0:M=0:S=0:T=0
70 IF S=60 THEN S=0:M=M+1
80 IF M=60 THEN M=0:H=H+1
90 H$=STR$(H):M$=STR$(M):S$=STR$(S)
100 IF H<10 THEN H$="0"+H$
110 IF M<10 THEN M$="0"+M$
120 IF S<10 THEN S$="0"+S$
130 T$=H$+M$+S$
140 FOR F=1 TO LEN(T$)
150 V=VAL(MID$(T$,F,1)):T=T+D(V+1)
160 NEXT F
170 IF T>=1000000 THEN GOTO 300
180 S=S+1:GOTO 70
300 CLS:PRINT T$," END"
```

The program works by creating a simple clock device (initially set at 00 00 00) which counts time in one second steps However at each reading the display is scanned and, using the array, each digit is converted to its segment equivalent, which is added to the total (T) When this value exceeds one million, the program ends.

Winner of Puzzle 178

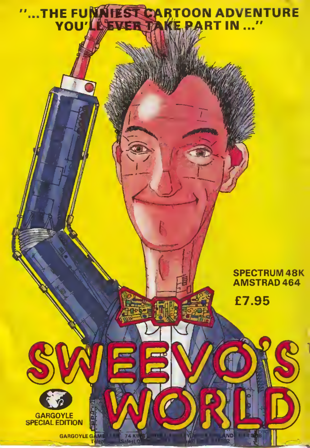
The winner is Peter Story of Priestfields, Rochester, Kent who receives £10

Rules

The closing date for Puzzle 183 is December 11

The Hackers


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Yie Ar KUNG-FU
...the name of the game
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ine Software is available from. WHSMITH John Menzies WOOLWORTH LASKYS Rumbelows.Greens.
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